

APRIL 1914 - No. 100

Issued Every Month
For Free Distribution to Users
of Machine Tools

HITCHCOCK'S MACHINE TOOL LIST

A Reference Book for Buyers
of Iron Working Machinery

Published by
A. H. Hitchcock
1220-1235 Caxton Building
Chicago

Where Ordinary Drills Fail

Take those jobs that have
put ordinary drills out of
business: try some

"Detroit" Twist Drills

on them and watch the
results. Every day and
all day, in all kinds of
service, they are
giving



**Increased
Efficiency**

and

Reduced Costs

in high grade shops all
over the country. Test them
on your work.

**Every one Guaranteed
Write for Catalog "J"**

Detroit Twist Drill Co.

Improving Twist Drills Since 1886

DETROIT 510-22 Fort St. MICHIGAN

30 Church St.
New York

633 Market St.
Philadelphia

412

One Extra Tool To Double Production

On Acme Multiple Spindle Automatics the milling of four rods of stock simultaneously means the completion of each piece in the time of the longest operation. That's a hard and fast rule on the Acme and it applies for any number of different operations necessary up to eight or ten.

But when this longest cut can be made by two tools rather than one, the time for the whole job is usually half the time of the single long operation. Dividing the long box milling, forming and drilling operations on the Acme adds only the cost of the extra tool but saves an additional 50% in the time.

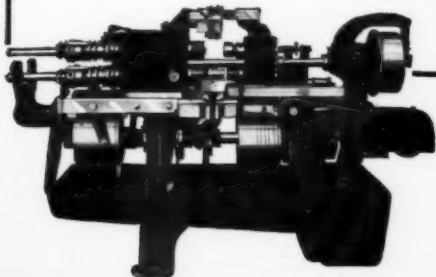
Next month we'll explain how extra tools are applied for extra operations, to save both time and equipment. The "Method Illustrated," sent free. Estimates from your samples, free also.

NEW YORK
BOSTON
CHICAGO
DETROIT
ATLANTA
MONTREAL

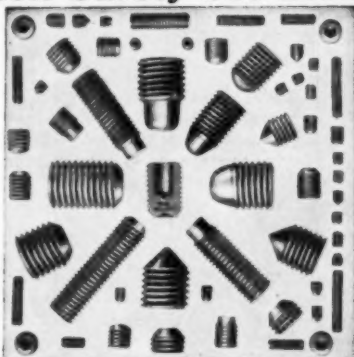
**THE NATIONAL-ACME
MANUFACTURING CO.
CLEVELAND**

EUROPEAN REPS:
SCHUCHARDT & SCHÜTTE

AUSTRALIAN REPS:
BENSON BROS. AT SYDNEY



Allen Safety Set Screws



Send for circular No. 13 and sample screws (for testing).

ALLEN MFG. CO., - Hartford, Conn.

Don't Spend a Fortune on High Speed Steel

You can reduce your investment in High Speed Steel to one tenth the amount needed in Forged Tools besides SAVING all Forging and nearly all the Grinding by using

Armstrong Tool Holders on your LATHES and PLANERS



They are used in most of the Big Machine Shops of the World.

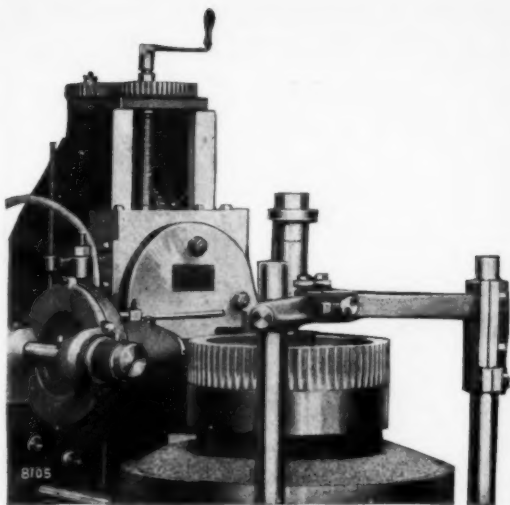
Catalog sent for the asking

Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.





Here's the Reason Why gears cut on the Farwell Hobber roll together so smoothly:

The blanks rotate *during* the cutting process, rolling in and out of mesh with the rack teeth of the hob which generate correct involute tooth curves on gears of all diameters.

There are many other reasons why you should use the Farwell Hobber—

Write for circular 805-H.

The Adams Co., 965 Hamilton Street,
Dubuque, Ia., U. S. A.

A 12 Inch Saw, \$125.

Screw Feed and Ball Bearing Thrust

Cuts 3x5 or
1-2x9 inch.

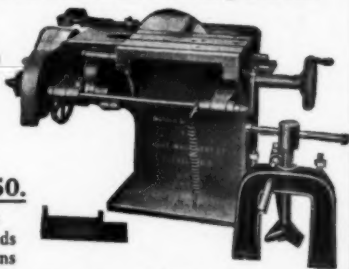
Power Friction
Feed.

Automatic
Knockout.

Large Clamp-
ing Table.

20-in., \$250.

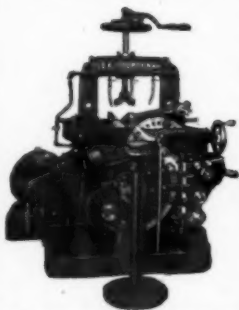
CAPACITY:
5½ Inch Rounds
12 Inch I Beams



Write for full particulars; they're interesting

The Burke Machine Tool Co.
Conneaut, Ohio

Lea-Courtenay



The Lea-Courtenay line of cold metal saws embody several strictly new features well worth investigating by interested parties—one of them described in the chapter entitled "Effective Cutting Range." Our No. 15 machine carrying a 15-inch blade will cut a 5½-inch round bar or a 10-inch I beam.

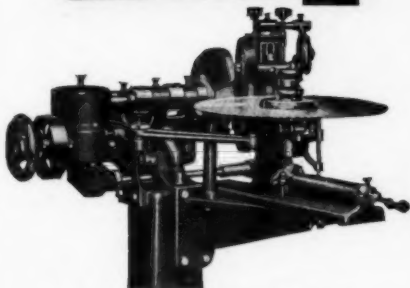
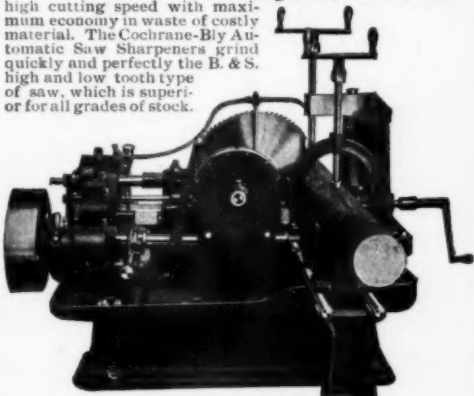
Machines in stock for immediate shipment.

Get posted on the best saw

LEA-COURTENAY COMPANY, Inc.
90 West Street, New York

Economy In Cutting Is the Paramount Consideration

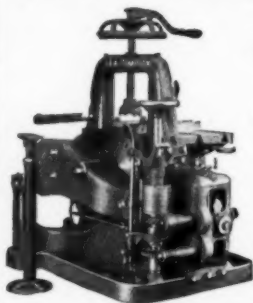
The Cochrane-Bly Cold Saws furnish highly favorable conditions for the use of **Thin Milling Saws**, which combine high cutting speed with maximum economy in waste of costly material. The Cochrane-Bly Automatic Saw Sharpeners grind quickly and perfectly the B. & S. high and low tooth type of saw, which is superior for all grades of stock.



*This combination greatly reduces cutting costs.
Let us tell you just how and why.*

Cochrane-Bly Co., Rochester, New York,
U. S. A.

THE SIMPLEX



Cold Cutting - Off Saw

Cuts quicker and cheaper

Rounds	Beams
Squares	Rails
Angles	Ingots
Channels	

Built in Four Sizes, with
Belt or Motor Drive

Ask for Bulletin D.

Lea Equipment Co., Philadelphia
Penna.

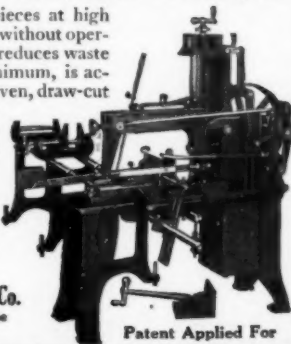
Operated by the Earle Gear & Machine Co.

Cuts Entire Bar Automatically The Marvel No. 5 Multiplies Production by Ten

Saws duplicate pieces at high speed automatically without operator's attention. It reduces waste of material to a minimum, is accurate, and has an even, draw-cut stroke. Consider the great reduction in both time and expense.

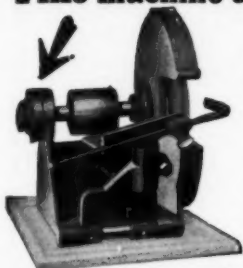
*Send for descriptive
circular of this machine
and other Hack Saws,
Punches and Shears*

Armstrong-Blum Mfg. Co.
341 N. Francisco Avenue
Chicago, U. S. A.



Patent Applied For

This machine saves you money!



If your men cut metal by notching and breaking—the old fashioned way—they are wasting your money!

For cutting High Speed and other

hardened metals, combination metal and wood, taps, drills, reamers, brass and steel tubing, tees, channels, etc., nothing works so satisfactorily, so quickly and so economically as the

Peter Brothers
Ball Bearing
Abrasive Metal Cutter

Goes through anything

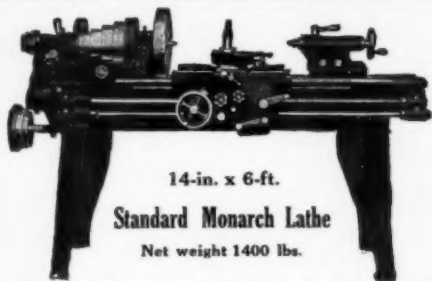
Machine shown, 12-inch size, \$50. Specially designed for shops cutting large quantity of metal. Cuts at any angle up to 45 degrees. Imported ball bearings. Two wheels furnished—8-inch size \$16.50. Adjustable gauge. Cuts square, smooth and accurately.

Both machines guaranteed to give satisfaction. Sold by most machinery dealers. If unable to buy locally, write to us. Immediate shipment. Prices F. O. B. Algonquin.

Peter Brothers' Mfg. Co.

114 Railroad Street

Algonquin, Ill.



14-in. x 6-ft.

Standard Monarch Lathe

Net weight 1400 lbs.

The best lathe in the world selling at a low price. You should not buy any lathe from 14 to 20-inch swing without first seeing the Monarch lathes.

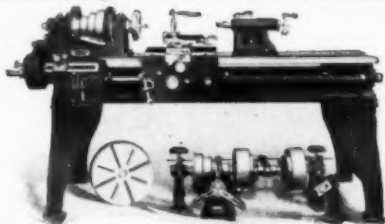
When you buy the Monarch lathe you get guaranteed accuracy and guaranteed lathe satisfaction, at a low price.

Let us send you catalog

THE MONARCH MACHINE CO., - Sidney, O., U. S. A.

High Grade, Convenient Lathe

32 Changes of Feeds and Threads

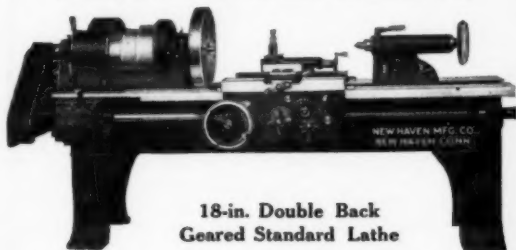


STRICTLY high grade, tested with a 12-in. bar not to exceed .001 in. Has a rigid bed, large phosphor bronze bearings, hardened and ground studs, and those refinements of construction that make for accuracy, dependability and capacity. Indexed to cut threads 3 to 32 to the inch; feeds, 20 to 200. **The price is interesting also.**

The Carroll & Jamieson Machine Tool Co., Batavia, O.

Moderate-Priced Standard Engine Lathes

18-in., 21-in., 24-in. and 28-in. Swing



**18-in. Double Back
Geared Standard Lathe**

We make two general styles of lathes—our Standard Engine Lathes, from 18-in. to 28-in., which are made to sell at a moderate price, and our High-Power Improved Engine Lathes, from 24-in. to 65-in. swing, which are as near perfection as the best of present-day practice, strictly modern equipment and our 60-years' experience enable us to produce.

Our factory is equipped to build high-grade tools, our workmen are trained to construct high-grade tools, and we buy material for the production of high-grade tools.

While building a large line of 24-in. to 65-in. Improved Engine Lathes, therefore, we find it practically as economical to put the best in design, the best in material and the best in workmanship into our moderate-priced lathes as it would be to turn out the kind that are usually offered at anywhere near the same figure.

That's where you win. In our Standard Engine Lathes, 18-in., 21-in., 24-in. and 28-in. swing, we offer you a quality-for-the-price that we do not believe you can duplicate.

Try us; put your lathe needs up to us

New Haven Manufacturing Co.
New Haven, Conn.

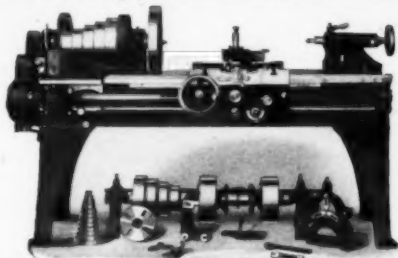


Fay & Scott Improved Planer Centers

For planing gear, fluting rolls, or any work which has to be carried on centers to be planed or milled, or which requires to be accurately spaced. A valuable feature is that the index plates, which are of large diameter, are cut through, like a gear tooth, which permits the use of a much stronger pin than is possible with a drilled plate. Work and index plate turn together, with a worm and gear, which are readily disengaged when not required. The tail stock center is inserted in a block, adjustable up and down, for planing bevells or tapers. Our three sizes, to swing 13, 20 and 36 inches, are easily attached to any planer. Special index plates for any work required. Let us quote you an interesting price.

FAY & SCOTT, Manufacturers, - Dexter, Me., U.S.A.

15" Heavy, Accurate, Modern



A lathe that combines tool room accuracy with manufacturing capacity—the kind that makes good anywhere.

A tool worth knowing. Write for full description.

Rockford Tool Co. Harrison Ave. & 11th St.
Rockford, Ill.

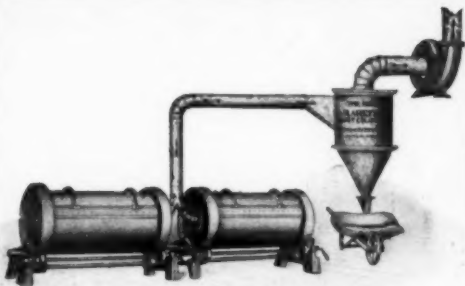
The Workmen's Favorite



**16-in. Lathe
With 3-Step Cone and
Double Back Gears**

A lathe that wins the operators wherever used, for what they can do with it; that brings re-orders from buyers, because of its qualities for the price. We are ready to prove up to **you**.

The Von Wyck Machine Tool Co., Cincinnati, O.



Your Factory

—should be equipped with Morse Dust Collectors because they give better service, and because they reduce operating, up-keep and repair expenses.

The Morse is different from all other collectors—it operates on the partial vacuum principle. The air is *drawn* in, and the dust is collected and automatically discharged before the air reaches the fan. Consequently there is no abrasion of fan parts, very little wear from internal friction, and no cleaning out by hand.

Whether your dust comes from emery wheels, sand blasts, tumbling barrels or polishing wheels, the Morse guarantees a clean factory—better health and better work.

Send for Booklet before tomorrow

The Knickerbocker Company
Jackson, Mich.



Hardening High-Speed Steel Cutting Tools
 Link-Belt Company Chicago

Harden Tools by Electric Heat

Tools hardened in the Hoskins Electric Furnace do not scale, warp or crack; and they are fifty to several hundred per cent. more efficient than the same tools would be if hardened in the best fuel burning furnaces.

This is because the electric heat of the Hoskins Furnace is free from flame and oxidizing gases; because it can be regulated and maintained with absolute accuracy; and because it heats tools uniformly throughout.

Also, the Hoskins Electric Furnace is by far the most economical in the long run. Let us show you.

HOSKINS MANUFACTURING COMPANY

Electric—Furnaces, Pyrometers and Heating Appliances
 "International" Ammeters and Voltmeters

461 Lawton Avenue, DETROIT

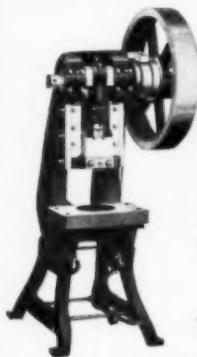
Otis Building
CHICAGO

Oliver Building
PITTSBURGH

30 Church St.
NEW YORK

Canadian Factory: Canadian Hoskins, Ltd., Walkerville, Ont.

YOU WILL LOOK



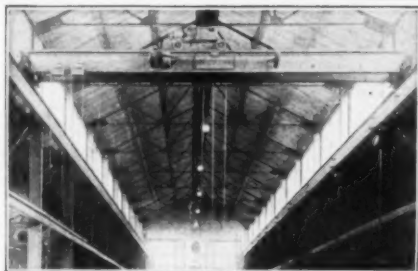
Long and Far before you
find a press that will turn
out work like

HIGH DUTY
ROCKFORD
PUNCH PRESSES

Power is concentrated into
doing the work **quickly**
and **cheaply**. Friction is
cut $\frac{1}{2}$ and speed increased.

*You get more work at less
cost. Investigate these
profit boosters.*

The Rockford Iron Works
Rockford, Ill.



Floor Operated **Electric Traveling Cranes**

do not require an operator in constant attendance and are
frequently as well or better adapted for handling material
than the more expensive cab operated.

We make all types of overhead cranes and hoists.

The Euclid Crane & Hoist Company
Euclid, Ohio

The Beche Hammer Motor Driven



**The Heaviest, Most Powerful, Efficient
and Economical Hammer of Its
Size on the Market.**

*Hammer and Compressor Combined, No Piston
Rods, Springs, Straps or Cushions.*

Simple—Durable—Reliable

Powerful, non-bounding, squeezing blow. Positive, flexible control. Long stroke. Variable blows at will. No adjustments. Dies at any angle. Belt drive, no countershaft. Motor drive, geared direct.

Sizes and Normal Capacities of Beche Hammers

66 lb.	165 lb.	250 lb.	350 lb.	500 lb.	770 lb.
2" dia.	4" dia.	5" dia.	7" dia.	8" dia.	9" dia.

Write for Catalogue and Prices

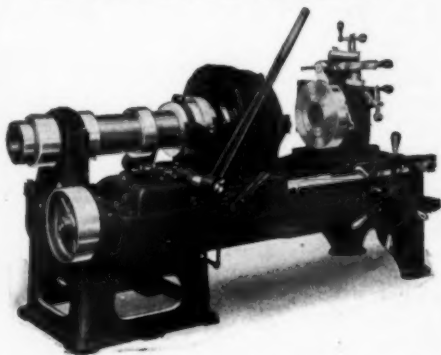
Nazel Engineering & Machine Works

Sole Builders for United States and Canada

5th and Luzerne Sts. - - Philadelphia, Pa.

To Thread Pipe— $\frac{1}{4}$ to 18 Inches

In the quickest time and at the lowest cost,
use B. & K.'s—they're fitted with the
famous Peerless Adjusting Mechanism



B. & K. Power Pipe Machines are the most economical to use because they do more work in a day than any other. The quick chuck, operated while in motion by a simple movement of the lever, is an exclusive feature.

The B. & K. line stand up perfectly in making up fittings, which is harder on machines than the cutting of threads.

Whether you make a specialty of threading, or do only a comparatively small amount of it, you are sure to find the right machine among our 17 styles and sizes. And they are all built to be handled without gloves.

*For economy, accuracy and durability use B. & K.'s.
Write us your needs.*

Bignall & Keeler Mfg. Co.
Edwardsville, Ill.

MURCHEY

Nipple and Pipe

Threading Machines

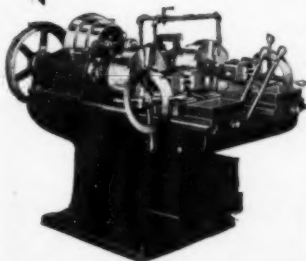
—triple the threading output for gas plants, compressor, condenser and range manufacturers, governor and engine makers and all producers of threaded pipe.

One man on the Murchey Type 2 Double Head Nipple and Pipe Threading Machine cuts 3500 1-inch standard threads in 10 hours. Or 1400 high grade Nipples in 8 hours. Other models thread 4800 pieces $\frac{1}{2}$ -inch pipe, 2000 pieces 2-inch pipe, or 700 pieces 4-inch pipe, in 10 hours.

All machines are provided with Murchey Self-Opening Die Heads, which insure quick, positive, universal adjustment—true, accurate, uniform threads.

Sizes to thread from $\frac{1}{8}$ -inch pipe to 4-inch pipe. Belt or motor drive. Wonderful cost cutters and production boosters.

Send for Catalog

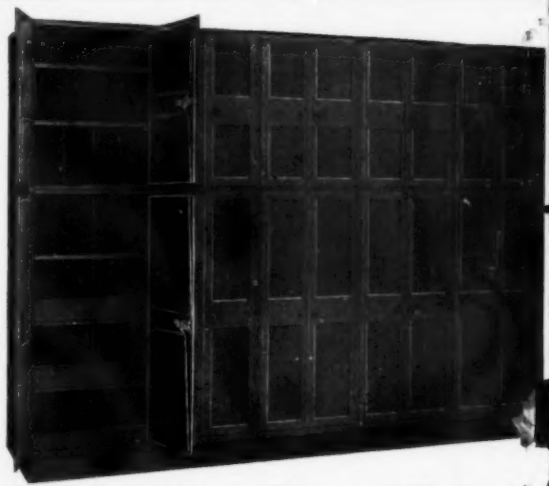


Learn all the features of these machines—their construction, their output, their many users. Get prices and full information.

Write Today

**Murchey Machine
& Tool Company**

Detroit 56 Porter St. Mich.



Closed and Open Bins and Shelves

One advantage of the Terrell System of Steel Factory Equipment is its perfect adaptability to your needs. You can have compartments of sizes suited to the material to be stored, so that more of some kinds than of others can be cared for without waste of space; sections may be open, like wooden shelves, or closed with tightly fitting steel doors, either kind as you need them in the same assemblage. Terrell Interchangeable Steel Units are such an advance upon old-time methods of building storage equipment that investigation at once commends them to managers who seek to keep expenses down and production up.

Decrease in your fire insurance rate is one of the economy items that you will find worth serious consideration. There are other savings; let us tell you about them.

Because Terrell Equipment looks good to you, don't in-
We have done wonders in getting it down to a reason-

Terrell's Equipment Company, Hall & Division



Lockers to Suit any Requirement

They are a necessity in a modern plant, and before long they are likely to be required by law, as they are in some instances now. Like other improvements in factory furnishings, lockers make for economy and increased output. They add to the comfort and satisfaction of the workers, and we all know that content breeds efficiency as surely as discontent produces its opposite. We have designed our lockers with the idea of satisfying both buyer and user—the employer and the employed—and their success proves that we have worked along the right lines. We make a size and style to meet every legitimate requirement.

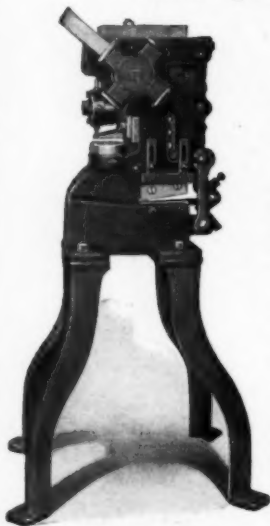
When the locker question is up to you, let us place the results of our study and experience before you. No charge or obligation for information and advice.

*don't imagine it is too costly to be available.
on a reasonable basis. Let us give you figures.*

Hall & Division Streets, Grand Rapids, Mich.

The Union Punch, Shear and Rod Cutting Machine

Hand Operated



Made in Three Sizes

The only machine made which combines all three operations.

There are four sizes of punches and dies on each machine.

The Shear and Rod Cutter are made of *the best* material.

This is a *Machine*, not a toy, and should find a place in every factory where metal is worked.

Size No. 2—Weight 190 lbs. complete as shown.

Cuts wire or rods $\frac{7}{8}$ -in. square and $\frac{1}{2}$ -in. or $\frac{3}{4}$ -in. round.

Shears $\frac{5}{8}$ -in. x 2-inch flat bar or No. 8 gauge plate.

Punches $\frac{3}{4}$ -in. hole in plate $\frac{1}{4}$ -in. thick.

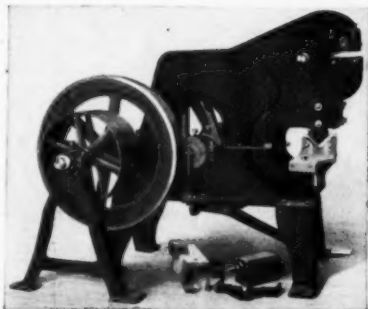
Send for complete catalog

Union Manufacturing Co.

Shear Department,

NEW BRITAIN, CONN.

Punches—Shears—Bending Rolls
The Beloit
Combined Power Punch And Shear



Built in five sizes. Nos. 51, 52, 53, 54 and 55

Direct connected motor or belt drive

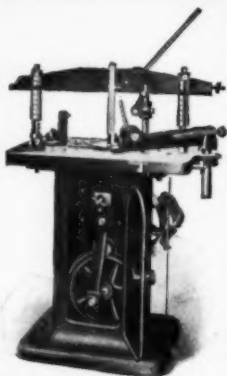
This is the best all around punch and shear in a combined machine of moderate cost. It is heavy and substantial, and amply back geared to require the minimum amount of power; is strong, compact, and easy to operate. Can be equipped with angle shearing attachment, architectural jaw, or for special work.

We are putting out a complete line of punching and shearing machinery in both power and hand tools, also light and heavy duty bending rolls.

We do not overrate the capacities of our machines.

Write for catalogue and prices.

Slater, Marsden & Whittemore Co.
Box 444, Beloit, Wis.



Davis Keyseaters

Stand for Rapid Production

They meet every requirement as a manufacturing machine and can be economically used on large and small lots. Also adapted for Slotting, Oil-grooving, cutting Keyways in Bell-cranks and similar work.

Made in two sizes:

- No. 1 Capacity $\frac{1}{8}$ in. to 1 in.
No. 2 Capacity $\frac{1}{8}$ in. to $\frac{3}{4}$ in.

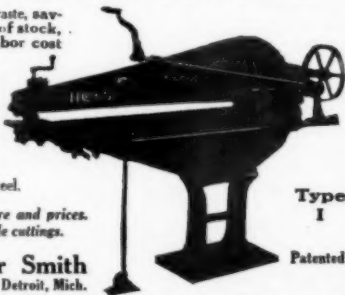
Write for complete information and copy Treatise on Keyseating, mailed free

The W. P. Davis Machine Co., 307 St. Paul St.,
Rochester, N. Y.

"Quickwork" Rotary Shear

Cuts any Kind of Irregular Curve of $1\frac{1}{2}$ -inch Radius or More, without Cutting in from Side

It cuts without waste, saving 10 to 40% of stock, and reduces labor cost from 75 to 90%. Leaves the metal flat, with true edges. Hand or power drive, instantly interchangeable and three speed changes. Sizes to cut up to $\frac{3}{4}$ " steel.



**Type
I**

Patented

*Send for literature and prices.
Ask for sample cuttings.*

H. Collier Smith
815 Scotten Ave., Detroit, Mich.

Chicago Representatives, Stiles-Morse Company, 565 Washington Blvd.

Bloody Fingers!

The grewsome and costly product of un-guarded or improperly guarded presses.

They drag at your purse strings and take a toll of fines, damages, and lawsuit costs.

They drag at your production. Fear of injury slows down each operator's production.

***Stop Press Accidents in a Way
That Increases Press Production***

Install

Cream City Accident Preventors

They stop press accidents absolutely. Their operation is certain and fool-proof.

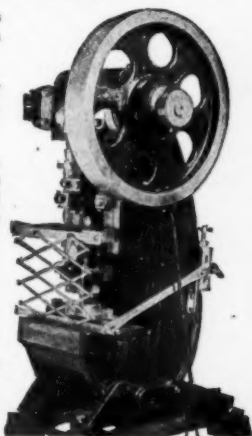
They neither hinder your workman's view nor his handling of his work

With them on your presses, speedy confidence replaces slow caution. The increased production soon repays the small cost of the guards.

***Write today for our special
Bulletin, "Perfect Press
Protection That Increases
Press Production."***

Gender, Paeschke & Frey Co.

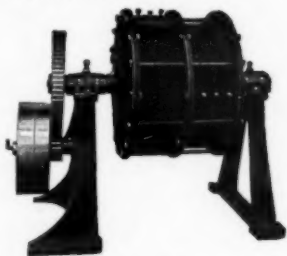
***1321-1700 St. Paul Ave.
Milwaukee, Wis.***



Burnishing Small Metal Parts at a
Saving of \$499.00 Out of \$500.00

While ONE DOLLAR Does the Work

When one of our customers says he is burnishing 50,000 pieces for the former cost of buffing only 100, it means that out of every Five Hundred Dollars once spent for buffing, he is saving Four Hundred and Ninety-Nine—spending now only One Dollar to do the work of the entire Five Hundred.



The Abbott Burnishing Process

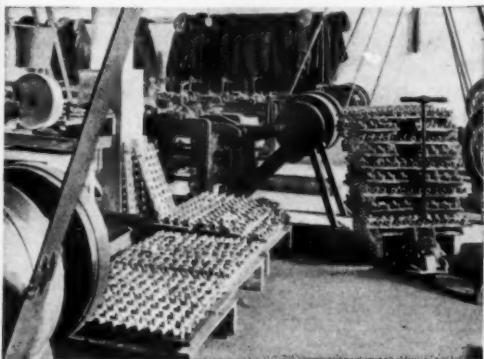
is also just as efficient as it is wonderfully economical. The peculiar construction of the barrel and the method of using the carbonized steel balls bring weight and friction upon the work in such a way that they **burnish** and **harden** the surface to a glossy smoothness, *without removing any of the material* and without breaking or bending the parts.

*Write for free booklet and approval offer
And send along samples for burnishing*

The Abbott Ball Company
Elmwood District Hartford, Conn.

The Cowan Transveyor

**Is to the Factory What a
Switch Engine is to a Railroad**



**Transveyor and Platforms loaded with Plumbers' Supplies,
which are moved about without scratching or nicking**

When material arrives at your plant, unload it from the car or team to inexpensive wooden platforms. Run your Cowan Transveyor under each platform in turn, and move them to any part of the plant desired. You can leave the stock on the platforms and arrange them in such a way as to give you increased storage room and save the time and expense of rehandling. It can be quickly moved at any time without reloading, for you have a regular little switch engine in the all-metal ball-bearing Cowan Transveyor, which does the work of several men with trucks and saves at least 75 per cent of the store room labor.

*Shall we send a Transveyor on approval, or mail particulars,
proofs and prices? Either at your pleasure.*

COWAN TRUCK CO., 75 Water St., Holyoke, Mass.

American Vulcanized Fibre

Best Made for Mechanical Purposes

Tough, Pliable, Durable

Can be sawed, turned, bent, embossed, cut, drilled, threaded, sheared, punched, etc. Send in your orders. Send us blue prints or samples of your fibre parts and let us quote you prices.

Our Development Department will be glad to answer your inquiries about the possible use of Vulcanized Fibre for your special parts.

American Vulcanized Fibre Co.

Wilmington, Delaware

Mr. Manufacturer:—

Let us show you a few new stunts in modern manufacturing. Send us B-P of the job that is causing trouble. Our specialties not only save time between the operations, but produce better work in less time. Air operated chucks, mandrels, jigs and

fixtures, collapsing taps, dies, auxiliary drill heads, Kelly reamers, have produced results for others. A complete line of modern tools. Anything sent on approval.

ESTIMATES

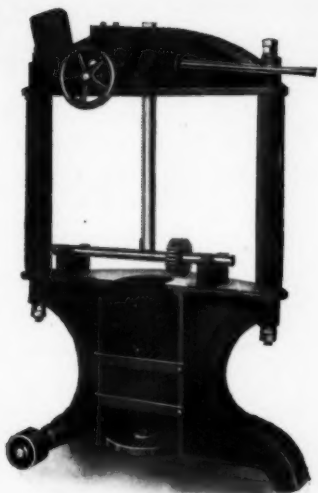
PRODUCTION

DEMONSTRATIONS

SPECIALISTS

Let us hear from
you today

J. R. STONE
TOOL & SUPPLY CO.
24 Goebel Bldg.,
Detroit, Michigan



(Straightening Automobile Rear Shafts)

In the Ford Motor Company's New Six-Story Chicago Palace

the business man who delights in system and up-to-dateness will find much to his liking. From the basement to the testing department on the roof, nothing seems to have been overlooked in detail of arrangement or modernness of equipment. It is therefore no surprise to find, among other good things, several

Greenerd Arbor Presses

—in fact, the place would not be complete without them. There's a choice of 14 styles and sizes.

Let me tell you what I can do for you

**Edwin E. Bartlett, 336 A Street,
Boston, U. S. A.**

American Vulcanized Fibre

Best Made for Mechanical Purposes

Tough, Pliable, Durable

Can be sawed, turned, bent, embossed, cut, drilled, threaded, sheared, punched, etc. Send in your orders. Send us blue prints or samples of your fibre parts and let us quote you prices.

Our Development Department will be glad to answer your inquiries about the possible use of Vulcanized Fibre for your special parts.

American Vulcanized Fibre Co.

Wilmington, Delaware

Mr. Manufacturer:—

Let us show you a few new stunts in modern manufacturing. Send us B-P of the job that is causing trouble. Our specialties not only save time between the operations, but produce better work in less time. Air operated chucks, mandrels, jigs and

fixtures, collapsing taps, dies, auxiliary drill heads, Kelly reamers, have produced results for others. A complete line of modern tools. Anything sent on approval.

*Let us hear from
you today*

**J. R. STONE
TOOL & SUPPLY CO.**

24 Goebel Bldg.,
Detroit, Michigan

ESTIMATES

PRODUCTION

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Greenerd Arbor Presses

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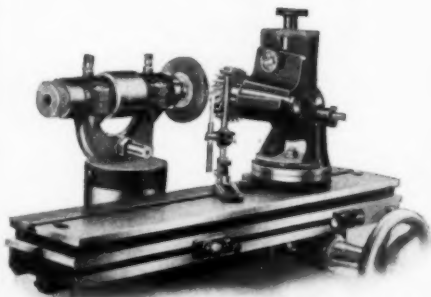
Let me tell you what I can do for you

Edwin E. Bartlett, 336 A Street,
Boston, U. S. A.

A Tool Room Grinder

With Attachments for handling
every kind of grinding job

That's the *Greenfield*



The Attachment here shown is one that will be found in frequent use. It will hold any kind of shank, round or square, straight or taper. It may be quickly adjusted to any desired angle by means of the two swivels, both of which are graduated for quick use.

While this Attachment is adapted to many uses it is only one of those which we furnish with our Grinder.

Write for our new No. 5 catalog and get a complete description of the wonderfully useful little machine.

Greenfield Machine Company
Greenfield, Mass.

FREE

TO

Designers
Works Managers
Superintendents
Draughtsmen
Machine Foremen
Tool and Jig Designers
Grinding Room Foremen
Boss Patternmakers
Foundry Superintendents
Railway Master Mechanics
Machine Tool Salesmen

and others interested in Reducing Cost of Machine Construction

1912 Edition

Besly's Modern Disc Grinding Practice

Copyrighted

112 Pages

103 Pictures

A valuable treatise on grinding flat surfaces instead of planing, milling, shaping, turning or filing.

Shows the way to Reduced Cost, Increased Output and Improved Product.

Should be in the hands of every live manufacturer.

*Write today for your copy of this valuable book
and study this important subject. Mailed Free.*

Charles H. Besly & Co.

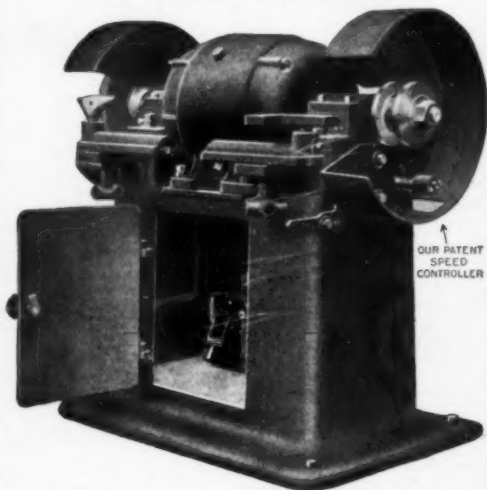
120-D North Clinton St., Chicago, Ill.



Registered
Trade Mark

Automatic Safety At Last

With Greater Production



The Patent Speed Controller Does It

In these days of humanity and safety laws, we cannot afford to ignore safety to our workmen; and in these days of close profits, we cannot afford to run a machine part of the time far below capacity.

The Speed Controller on our Motor Driven Grinder automatically maintains the same periphery speed on all emery wheels—new or worn, over-size or under-size—giving the right grinding speed all the time and never too fast for safety.

A workman unafraid and an emery wheel always at the right speed—isn't that an ideal combination?

RANSOM MFG. CO., Oshkosh, Wis.



A Gardner Grinder At Work

on the famous Lumen bearings. The bottoms are faced off and the two ends ground parallel and to given length. The output is way ahead of former methods of machining these pieces; a marked saving in material is effected; and, the standard of accuracy is dependable at all times.

This is one of the hundreds of jobs being done daily to great advantage on modern Gardner Grinders. On work suited to these machines we guarantee an increased output of 3 to 30 times. Send us some of your unfinished samples for a free demonstration, and you will be surprised to learn how fast and accurately some of your surfacing operations can be performed by the Gardner Grinder way.

"Actual Tests," a free booklet, shows 24 illustrated reports

Gardner Machine Company

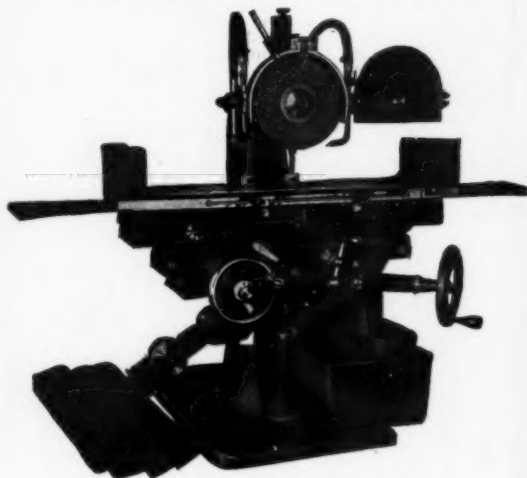
The Disc Grinding Authorities

Beloit, Wisconsin

Largest Disc Grinder Builders in the World

W. & M. Wet Surface Grinders

A Big Step in Advance

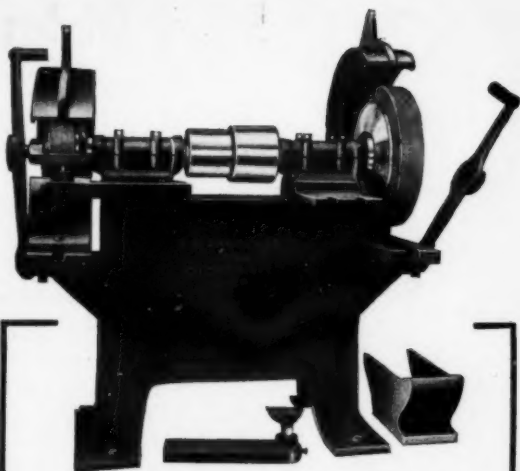


This No. 3 Surface Grinder works to as fine limits of accuracy as any standard surface grinder made. This is conservative, and yet where the nature of the work allows it, this machine will take cuts up to .125" deep with .100" cross feed. Full automatic feeds in both directions. Ample capacity for pump, diamond wheel truing mechanism, excellent protection from dust and dirt are features demanding your attention.

Ask for No. 3 surface grinder circular

Wilmarth & Morman Co.

1185 Monroe Ave., Grand Rapids, Mich.



Partridge Heavy Grinder

¶ The No. 555 carries 18x3 emery wheels, and is built for extra heavy work. Net weight is 1,160 lbs.

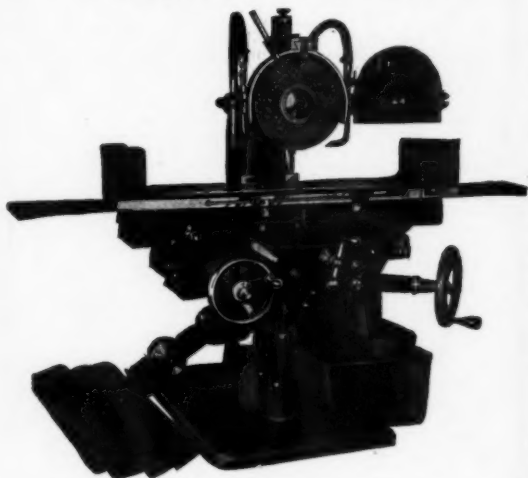
¶ The patented heavy steel guards are adjustable. The machine is equipped with attachments to connect with blower system. No. 555 is safe, efficient and durable.

Your request will bring details and price

¶ **E. O. PARTRIDGE, 2047-9 W. Lake St., CHICAGO**

W. & M. Wet Surface Grinders

A Big Step in Advance

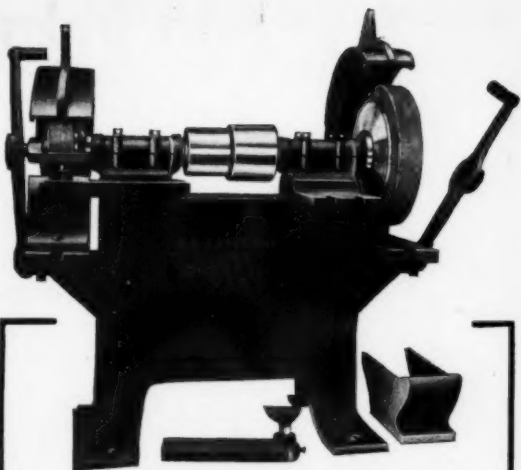


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Your request will bring details and price

¶ **E. O. PARTRIDGE, 2047-9 W. Lake St., CHICAGO**

Lourie Hydraulic Arbor Presses



Type "B"

Hand or Power

Made in many sizes
Made for many uses

**Very Efficient Machines
at Low Cost**

Vertical or Horizontal Presses
designed for any pressure purpose
to work as purchaser may want.

Write to

**Lourie Mfg. Co.
Springfield, Ill.**

Eames Presses Make Good

They are powerful, accurate and serviceable tools, built to give the maximum service under all conditions.

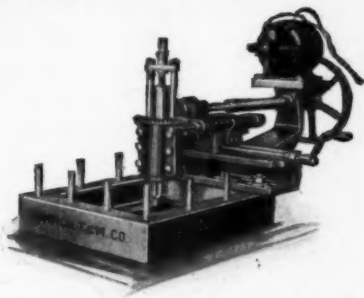
Our business is being built up upon the performance and merit of our product. For driving mandrels, pressing bushings, pins, broaching, etc., the Eames Press is the most economical & best way.

Let us send you a press on approval. Write for information or take it up with your machinery dealer.



The G. T. Eames Company
412 Oakland Drive, Kalamazoo, Mich.

Take it to the Job



For facing valve seats or any milling work in position, our new Portable Milling Machine is the handiest time-saving tool in the shop.

It may be attached to anything and operated by hand, belt or motor.

The machine weighs less than 200 lbs., but the construction is strong and above all, *durable*. Half your time isn't spent making repairs to small gears and weak parts.

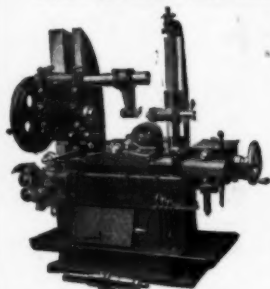
While thinking about it, send for our bulletin which tells more than we can here.

Remember us for Portable Machinery, Cylinder Boring Bars, Crank Pin Machines, Pipe Benders—all new design and modern.

Pedrick Tool & Machine Co.
3644 N. Lawrence St., Philadelphia

Accurate Gear Cutting Machines

The Newark Automatics are Reliable



They are designed for the rapid production of smooth running gears at bed-rock cost.

They have long cutter carriage with draw stroke, and accurate indexing mechanism with safety stop. Made in all sizes.

Begin a profitable acquaintance by writing us. No trouble to answer your questions.

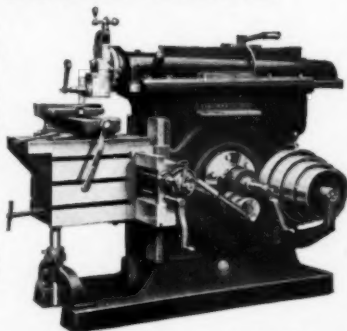
Newark Gear Cutting Machine Co.

69 Prospect St., Newark, N. J.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

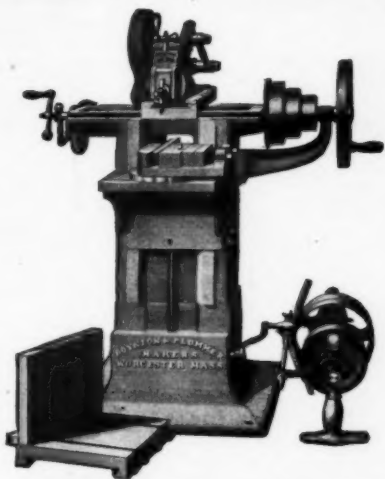
24", 28", 32"
Geared
Shapers of
the Belt Shift
type.



The Smith & Mills Co.

Station B,
Cincinnati, O., U.S.A.

SPECIAL 6x9 Shaper, 14-in. traverse, with swivel and plain chucks that take work full length of traverse, and countershaft. **\$160**



**6x9, 8x12 and 10x15-Inch
Improved Shaping Machines**

The capacity of our improved machines has been increased. The feed is automatic and reversible. The cutter-bar has a graduated swivel head. They will prove particularly profitable where much short work is now being done by filing and planing, often saving the room and expense of a large planer. A large opening in the machine permits the insertion of long work, such as shafts for keyseating, etc.

Write for Shaper Catalog, also separate Catalog of Post Drills, Bolt Cutters, Bending Machinery and Nut Tappers.

**Boynton & Plummer, Inc.,
Worcester, Mass.**

One Day's Trial

Resulted in an order being placed for 12 more Grant Noiseless Rivet Spinning Machines.

A few reasons why:-

1. They are **absolutely noiseless** in operation.
2. They spin a highly polished head on a rivet.
3. They eliminate entirely broken castings.
4. They will not mar surface of article being riveted.
5. They will rivet either tight or loose as may be desired.
6. They complete the riveting operation in just **one second**.

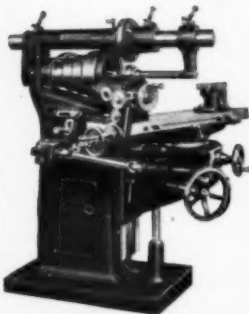
Catalog ?



The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Rockford No. 2 Universal

16 Speed Changes. Positive Drive through Gears.
Working Surface of Table 38"x9"



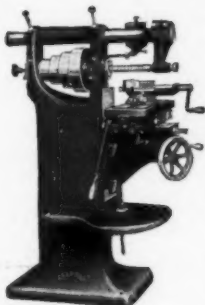
This Modern Miller

has our Patented Flange Support to the Overhanging Arm, bolted to seat of column, which insures unusual stiffness in heavy work. This so reduces vibration that heavy cuts are taken with great accuracy. The construction throughout is of the Rockford standard of excellence.

We make others. Put your milling problems up to us.

Rockford Milling Mche. Co.
Rockford, Ill.

Don't Crowd Your Large Machines



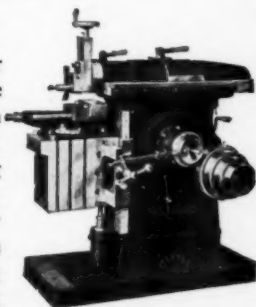
with small milling machine work that should be done on a small milling machine.

Steptoe Hand Millers

are heavy tools that will permit taking heavy cuts with accuracy and will cut your milling costs.

Steptoe Shapers

on account of their accuracy will save filing and scraping in the vise department. No idle gears running when not working. Several features for making adjustments quickly and reducing the cost of the work make Steptoe Shapers



"just a little better."

Circular on request

The John Steptoe Company

Station B., Cincinnati, Ohio, U. S. A.

A Big Milling Economy

Makes your Drill Press
equal to a \$1,000 Miller

Converts
any machine
from
14 to 42-in.
swing in
2 Minutes



Davis Milling Attachment & Compound Table does 90% of the lighter jobs as well as a \$1,000 machine. Cuts keyseats straight or taper cuts the Woodruff or half moon keyseats perfectly, mills deep grooves or slots, cams, etc. *Write for details and an interesting price to*

Hinckley Machine Works, HINCKLEY, ILL.

Kelly Reamers and Boring Tools

In Steel, Bronze, Iron or
Aluminum,

Engine Cylinders
Connecting Rods
Auto Parts, Hubs, etc.

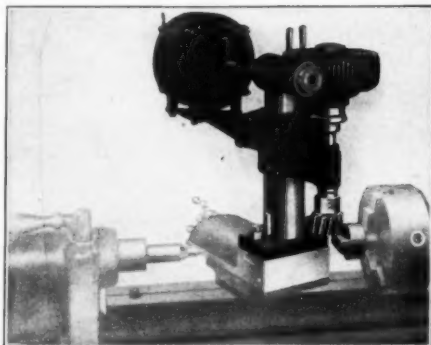
Crank Cases (Cam and Crank
Bearings)

Write for Catalog H.



THE KELLY REAMER CO., - Cleveland, Ohio
C. W. Burton, Griffiths & Co., London, Agents for England.

A Big Money Maker for the **Garage or Repair Shop**



Patented April 1, 1913.

Other Patents Pending.

A Lathe Milling Attachment that will do all kinds of milling work.

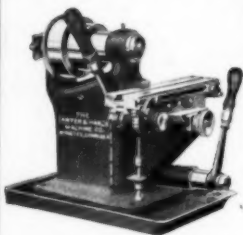
Easily Attached—Simple to Operate

It Costs So Little
that you can't afford to be without it.

Ask for Circular H-21

The Cincinnati Pulley Mchy. Co.
Cincinnati, Ohio

Designed For Manufacturing

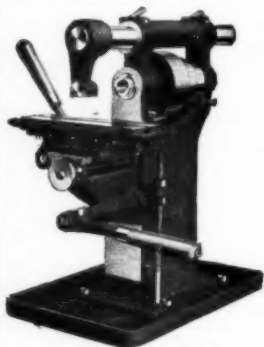


But built good enough for the Tool Room. If you have any doubt about it, just try one. Our two-speed Friction Counter and plain Index Center help you to do the trick.

Send for circular

The Carter & Hakes Co. **West Winsted, Conn., U. S. A.**

AGENTS—Marshall & Huschart Mchry. Co., Chicago, St. Louis, Indianapolis; Mott & Merryweather Mchry. Co., Cleveland, Detroit, Cincinnati, Pittsburg.



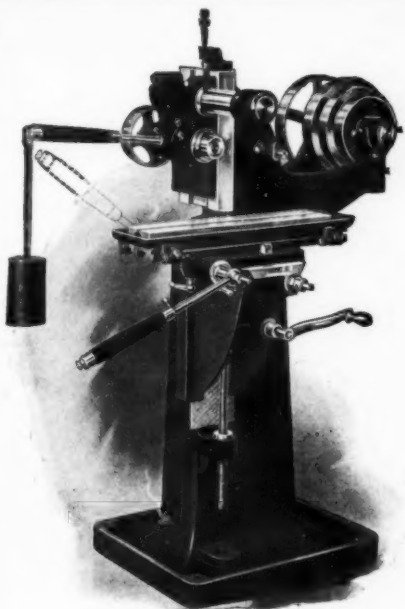
Burke's No. 3 **Bench Millers** **Are Seasoned Tools**

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.;
traverse feed, $3\frac{1}{2}$ in.; vertical
motion of knee, 8 $\frac{1}{2}$ in.; table
surface, $3\frac{1}{2}$ x 12 inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co. **Conneaut, Ohio**



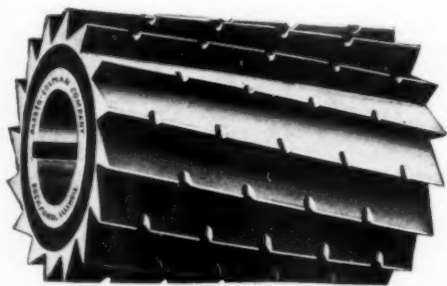
"Whitney"
Hand & Weight(feed) Milling Machine

For Cam Cutting, Gear Cutting, Key Seating, Profiling, Slabbing, Slotting, etc., this machine is the handiest, most adaptable, and most efficient on the market.

Catalog No. 10 gives full particulars

The Whitney Mfg. Co.
233 Hamilton St., Hartford, Conn.

*Pin your Cutter
faith to*
B-C Cutters



A cutter is either *good* or bad according to whether it does, or does not do your work properly and to your entire satisfaction.

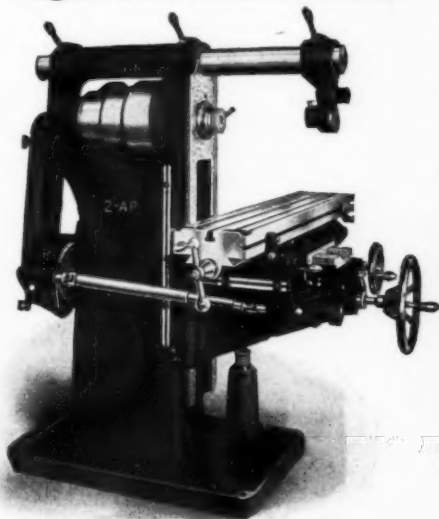
The B-C Cutter business is built upon the ability to furnish *good* cutters, not occasionally but consistently—*every time*.

Pin your cutter faith to B-C Cutters.

BARBER-COLMAN COMPANY
ROCKFORD, ILLINOIS

Garvin MILLING MACHINES

The Kind To Buy
Rigid—Powerful—Durable



No. 2-A (All Feeds) Plain Milling Machine—Adjustments—28x8x19 in.

IMMEDIATE DELIVERY

FOR FURTHER INFORMATION } ASK YOUR DEALER
OR
WRITE US DIRECT

Send for circular No. 164

Manufactured by

THE GARVIN MACHINE CO.

Spring and Varick Sts., New York City

The Bristol No. 2 Hand

A Really Remarkable Machine

This rugged tool is 50 per cent heavier than any other machine of its type, and we believe we have built into it at least 50 per cent greater value in capacity, range, stability, accuracy and convenience. In fact, it marks the most radical advance in hand miller efficiency ever accomplished at a single step.

It is particularly adapted to profiling, cam cutting, gear cutting, key seating, slotting and slabbing, and even more particularly to all sorts of end milling operations, because all tendency to heat from end thrust has been eliminated.

This machine is provided with very heavy dovetail slides, which affords a more secure knee support. The spindle, which has double taper at each end, has the construction used in high-class precision tools. The long bronze spindle bearing sleeve has double taper, with reservoir for complete lubrication. The geared head on spindle assures ample power for heavy cuts. The cone pulley back shaft is equipped with a double row combined radial and thrust ball bearings. The bearings are encased in a dust-proof housing and require lubrication only once or twice a year. With the back gears in mesh, a reduction of two to one in spindle speed is obtained, thus doubling the torque. With this method it is not necessary to change the pulleys for the different speeds.

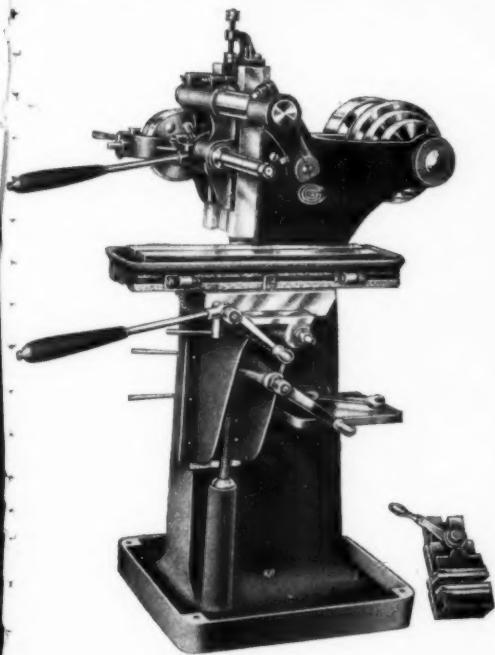
These are only some of the points of excellence. There are others, of which our literature tells in part, but which the machine itself will demonstrate most profitably.

We want you to know more about our modern No. 2 Hand Miller—and about our No. 3, which is the same, excepting that it is provided with power feed.

Won't you start the ball rolling, advertising

The C. G. Garrigus Machine Co.

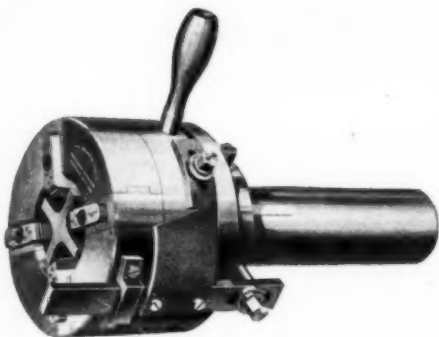
2 Heavy Hand Miller



ing, *send in your name and address?*

Co., - - Bristol, Conn.

The Geometric

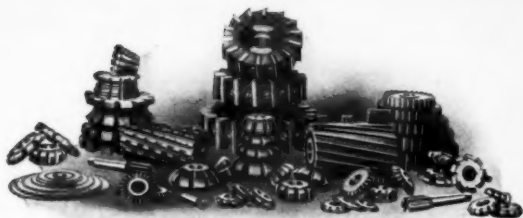


Taper Threading Die Heads

Are made to order, for all forms
of special taper threading. For
use on hand turret lathes.

*Send samples or drawings of your work
and let us make you a quotation.*

The Geometric Tool Company
New Haven, Conn.



Tell us your cutter difficulties

whether problems of accuracy, production, or length of service. We have probably faced the same situations at some time, and can readily remedy your troubles. We developed the extensive line of

B. & S. Cutters

by experience and study of not only our own requirements but those of our customers.

Hardening of cutters is one of the most important steps in their manufacture. After years of experience we have perfected this process to a point where dependable uniform temper and large wearing qualities are assured.

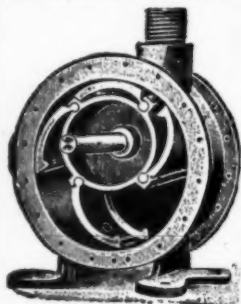
We carry in stock at all times over 40 styles and 3800 sizes of cutters.

If your work requires special form cutters, send us a drawing or sample and we will gladly submit estimate of cost of cutters.

Write for our cutter catalog

Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

LEIMAN BROS.



Positive High Pressure

Blowers and Vacuum Pumps

They Take Up
Their Own Wear

Used for furnaces, blow-
pipes, etc., for intensify-
ing the heat. Also for
sand blasting, special
machinery of all kinds
and

Vacuum Cleaning

LEIMAN BROS. 62 John St.,
NEW YORK

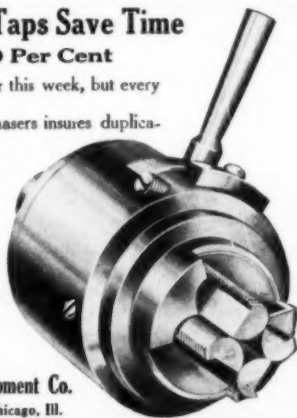
"M. E. C." Taps Save Time Often 40 Per Cent

Not only today or this week, but every
day in the year.

Construction of chasers insures duplica-
tion of thread di-
ameter with little
or no adjustment
for size.

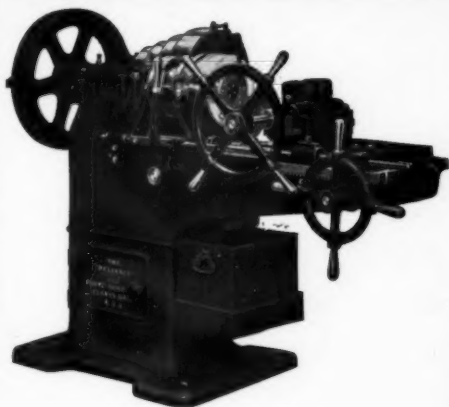
Equally good in
brass, iron and steel.

*Glad to send you one
of our 11 sizes on trial,
free. Your address,
please.*



Manufacturers Equipment Co.

171 N. Jefferson St., Chicago, Ill.



Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio

Silver's 20" Drills

Eight Styles

LEVER FEED

LEVER and WHEEL FEED

POWER FEED and Automatic Stop

POWER FEED with Back Gears and Automatic Stop

Round or Square Base

Send for catalog

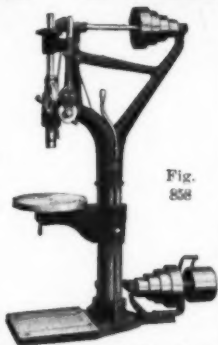
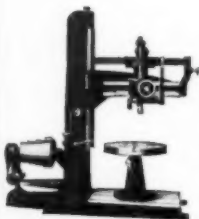


Fig.
858

**The Silver Mfg. Co., 385 Broadway
SALEM, OHIO**

Nature would have made
a Radial Drill just like
the "Gang." A test of a
drill is in its ease and
freedom—"as the eye is."

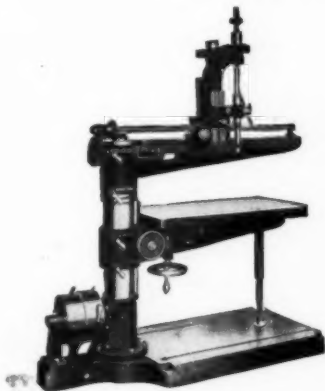


The New Gang Radial Drill
Catalogue ready for mailing

THE WM. E. GANG CO.
Cincinnati, O.

Saves Money on Every Operation

Drilling
Tapping
Counterboring



The T. & F. combines the conveniences of the radial and sensitive drilling machines—hence its great economy for drilling small holes in big pieces. When equipped with two heads it also counterbores and taps, so that the whole job can be done with one setting.

Although rigid in construction, it is the lightest drilling machine of its type, easiest to handle and quickest to adjust.

Its top-notch efficiency means a sure reduction of drilling costs in your shop. That's what you want. Let us send you some cost comparisons so you can judge.

The Taylor & Fenn Company
Hartford, Conn.

Something New In
Bench Drills



A High Speed Ball Bearing Machine

Maximum Spindle Speed
10,000 R. P. M.

Careful design and high grade workmanship throughout; accurate balance of high speed parts for minimum of vibration; Hess Bright Ball Bearings.

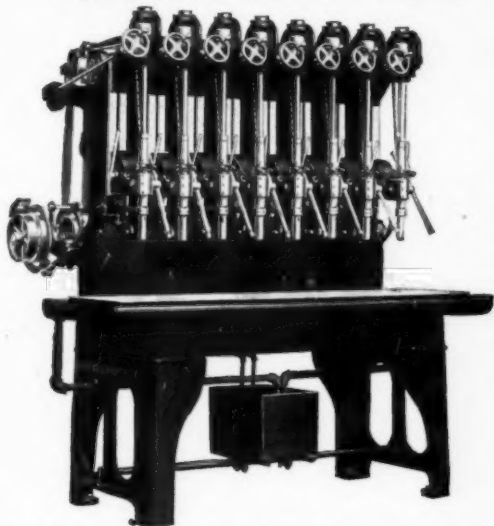
Write us today

Leland-Gifford Co.
Worcester, Mass., U. S. A.



Large Production Drilling Machine

8-Spindle, Class L, 8-inch Overhang



Class L machines are lighter and cost less than the Class B type, and are especially designed for the manufacture of light, interchangeable parts for small machines and products. They illustrate the patience and care with which our whole line of drilling machinery is developed to suit each manufacturer's needs. No matter what you have to drill, it is our aim to produce a machine that will give you greater production speed, greater accuracy, and greater cost economy than can be obtained with other methods. Isn't it worth while knowing whether we can do that for you? Tell us what you are doing, or want to do, and let us tell you what we can save you.

Don't wait; write now.

The Henry & Wright Mfg. Co.

760 Windsor St., Hartford, Conn.

"Economy" 14" Sensitive

Accuracy Guaranteed

For high quality of workmanship, accuracy, design and material, our No. 205 Drill has no superior today. Every detail has been worked out to effect the greatest convenience and efficiency, hence it makes good in tool room, general manufacturing and repair shop. Upper table swings around column and can be tilted to any angle; lower table is adjustable vertically, and has a new patented centering device, a combination of three centers in one.



*Write for description of our 14-in. and
10 OTHER STYLES of Drill Presses*

ROCKFORD LATHE & DRILL CO., - Rockford, Ill.

Also 13, 14 and 16-inch Engine Lathes

Profit Boosters

Mechanic's Drills

have the speed, convenience and endurance that insures a maximum output all day and every day. This high grade line includes:

Standard Uprights

14-inch to 36-inch

Gang Drills

2, 3, 4, 5 and 6-spindle

The cut shows our popular 14-in. belt driven drill. Your inquiries are solicited.



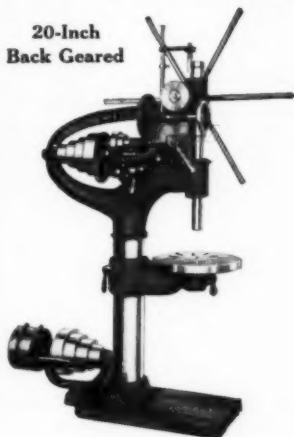
ROCKFORD MACHINE TOOL CO., - Rockford, Ill.

Manufacturers of Planers, Shapers and Mechanics' Drills.

It Was Needed in Our Shop

**To Lower Our Drilling Costs
It Will Do the Same in Yours**

**20-Inch
Back Geared**



**We
Needed
Greater
Power
at the
Drilling
Point
And
Greater
Accuracy,
And we
Got it**

First, we placed the bevel gear drive at the lower spindle bearing, which is much nearer the work. Note the difference. Then we made the lower bearing adjustable, to insure rigidity at the drilling point and to make it permanent. A stiff construction; larger bearings throughout than on other 20-inch drills; a hand feed without ratchet, requiring only one hand—these and other features we want to tell you about, for reducing your drilling costs as we have reduced ours.

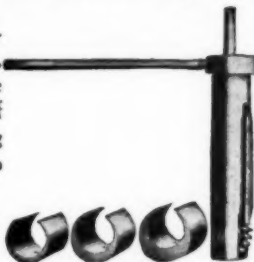
While you have it in mind, just drop a line to

CANEDY-OTTO MFG. CO., Chicago Heights, Ill.

KEYWAYS cut on the drill press

Internal keyways, either straight or taper, are cut perfectly on the drill press by means of a high speed milling cutter in holes 5-8 to 12-in. diameter.

Over 5000 in use.



Get Booklet O and prices

National Machine Tool Co.

2270 Spring Grove Ave.,

Cincinnati, Ohio



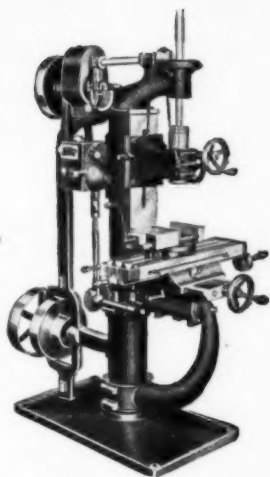
Burke Quality

Excels on Fine Points

Machines of **Burke Quality** are never built with any name cast on the frame but our own—

**BURKE
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U. S. A.**

For Sale Everywhere



Milling, Boring and Drilling In Less Time

—saves money—always. And it saves a good lot of it when it reduces time 20 to 50% in the tool room and on hard machining of all sorts.

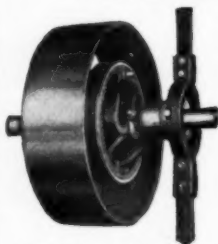
The Knight Milling and Drilling Machines do all three operations with only one setting of the work. They have no equal today for work on dies, jigs, metal patterns, etc. Three sizes.

Get posted on the Knight—it's made Right

W. B. Knight Machinery Co.
St. Louis, Mo.

Edgemont Clutches

Are Standard Everywhere



Line-Shaft Light Duty Clutch Pulley, with heavy duty expanding frictions.

We are manufacturers of Friction Clutches, Cut-off Couplings, Countershaft Clutches, Special Clutches and Transmission Machinery for all purposes.

Edgemont Transmission Devices have been adopted as their standard by leading manufacturers everywhere because they have "made good."

Write for Catalog "E" and names of leading users

The Edgemont Machine Co.

National Ave. & Neibert St., Dayton, O.

Three Strong Points of Chuck Service

Adaptability—Dependability—Durability



Are found only in Sweetland Service

Let us show you

The Hoggson & Pettis Mfg. Co.

New Haven, Conn.



Electric Air Cooled Drills

Are Best by Test

Are You Still Paying Two
or three prices for a job
just because you have al-
ways done so



The fact that the U. S.
Government tests prove they
are superior in every respect
should be convincing evidence
to all users of this type of tool.

Aside From This

there's the evidence of thousands of users all over the United
States. Would they use them if they were not the best? Hardly.

Want a Catalogue? A Postal will bring it.

We use aluminum for Casing on all Drills to cut down weight
Power from any Lamp Socket

SENT ON TRIAL ANYWHERE

*Made for alternating or direct current
Just attach it to your nearest lamp socket*

**The United States Electrical Tool Co.
Cincinnati, Ohio**

NEW YORK, 50 Church St.

BOSTON, 12 Pearl St.

CHICAGO, 8 E. Michigan St.

PHILADELPHIA, Heed Bldg., No. 1211 Filbert St.



**"The Chuck that never slips
The more you crowd it, the tighter it grips."**

No keys or spanners to get mislaid or lost; one hand works it, both ways.

It tightens itself; crowding only strengthens its grip; the drill can neither slip nor wobble.

Ball Bearings make release quick and easy, saving time and drills.

Shank forms part of chuck—a valuable feature.

The Coit Drill Chuck is one of those little time and trouble savers that pay dividends out of all proportion to their cost.

Like to try one? Let us know.

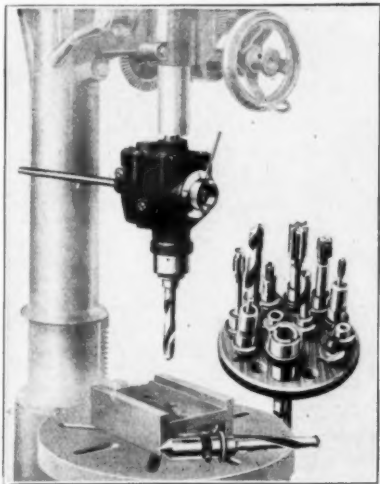
Narragansett Machine Co.
Providence, Rhode Island

We also manufacture Semi-Universal Grinding Machines,
Disc Grinders and Steel Lockers.

25% to 50% Saved

on a lot of Drill Press work by the Wizard Variable Speed and Reversing Attachment.

Permits of changing tools without stopping the machine and gives the right speed for every tool and a reverse for tapping, stud-setting, etc. Converts your old Drill into an up-to-date machine and saves running your new Drill at machine-rackingspeeds.



Try One at Our Risk

A copy of our Catalogue No. 4 might point the way to some big savings in your shop. Describes the whole Wizard proposition and other real time-savers.

May we send you one?

The McCrosky Reamer Co.
Meadville, Pa.



Quick Action

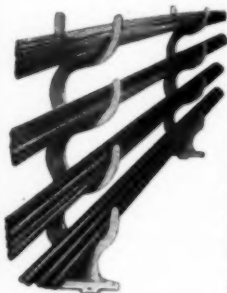
This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Send for Catalogue and prices

The Cincinnati Ball Crank Co.
Oakley, Cincinnati, Ohio

"The Handiest Rack"



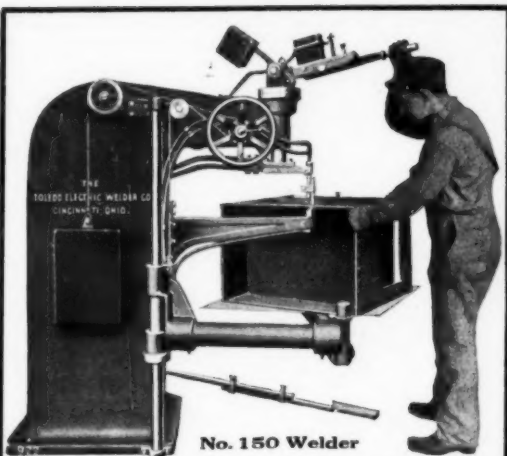
It carries pipe and bars in a fourth the space, saves time and trouble, is a great convenience.

An accident in our plant caused us to make it for our own use, and we are passing a good thing along. It's cheaper than pinched toes or worse.

Height 51 inches, width 13 inches, and has four 10-inch spaces. Takes in 4-inch pipe over three lower hooks. So nicely balanced that it hardly needs fastening.

You pay for it only once, and it's worth more than it costs.

Wm. S. Yohe Supply Co.
314 Lincoln Way, West, Canton, Ohio



No. 150 Welder

Riveting Costs Reduced From 60% to 95%

It's the electric way

SEND US A SAMPLE of the work you are riveting. We will weld it and return to you free. Then go at it with a sledge hammer and pound it. Don't be afraid of breaking anything except the hammer. Then find out how little it costs to do the work and decide whether you can afford to do without a welder.

BUTT WELDERS? Weld anything that's weldable. Over 30 different kinds to select from, and one welder will do the work of 10 blacksmiths. If you have any welding to do, let us tell you about them.

No Lease

No License

No Royalty

The Toledo Electric Welder Company
Station A, Cincinnati, Ohio



The Brisben "Diamond" Emery Wheel Dresser

Patented Aug. 20-1912

Runs true and cuts true
until entirely worn out.

*Let us tell you
more about it.
We will send
one to you on
approval.*



Its superiority will always save you time and money

Cleveland Flue Cleaner Manufacturing Co.
321 Frankfort Ave., N. W. Cleveland, Ohio, U. S. A.



Decrease Your Losses

By knowing
what your
Stamping
Presses are
producing.

Durant Counters

Show up inefficiency, save hand counting and
keep you posted on output.

They Pay their Way.

Sent on 30 days' trial—ask for Catalog 19.

THE W. N. DURANT CO., Milwaukee, Wis.

The "Canton" Portable Crane & Hoist



is not built to meet a price—but to give everlasting good service; to stand up under severe strains and to satisfactorily fill your requirements, no matter how exacting.

Buy a "Canton" Portable Crane—

because it's the best; because it will handle your work in less time, with less labor, at less expense and insure absolute **safety** to your men and machines.

Write today for catalog E-8,

which illustrates the **quality Hoist**. Let us show you what this tool means to you; how you can save—and why (**economy considered**) it will work wonders for you.

Canton Foundry & Machine Co.
Canton, Ohio

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
 " No. 0 32 " "
 " No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
 " No. 9 Tilting Table
 " No. 10

Boring attachment if wanted.



Jointers

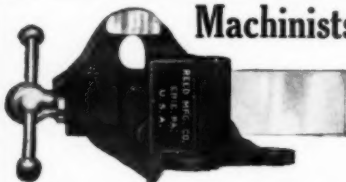
8 in., 5 and 6 ft. tables and guard,
 12, 16, 20, 24 and 30 in., 7 ft. tables
 and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard Chicago



Machinists' Vises

In any combination of
 stationary or
 swivel jaw
 or base.

That are Guaranteed Against Breakage

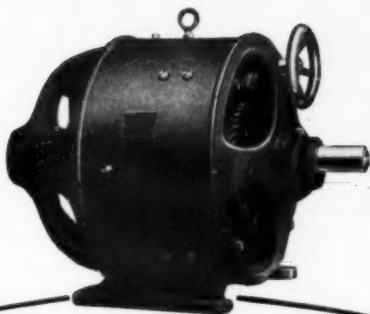
Our Guaranty means that if one of our vises breaks, we make it good at once.

The reason behind our Guaranty, however, is more important to you than the Guaranty itself—and that reason is, Reed Vises don't break.

Breaking tests—repeated breaking tests—were necessary before we found all the weak points. But we did find them, and we now build vises that don't break, and their machine-finished surfaces insure a snug fit during long usage.

Write us for a lot of practical facts about vises

REED MANUFACTURING CO., - Erie, Pa.



A Motor With Speeds to Fit the Job

It is no longer necessary to operate your machines at an unprofitable speed on miscellaneous work. You can have just the speed you need to get the quickest results on each job by equipping your machines with

Reliance Adjustable Speed **Motors**

These motors run at any speed over any range up to 1 to 10. There are no fixed steps and no loss of current as the speed is varied.

The motors develop full power and will carry heavy overloads at all speeds. No electric controller is used.

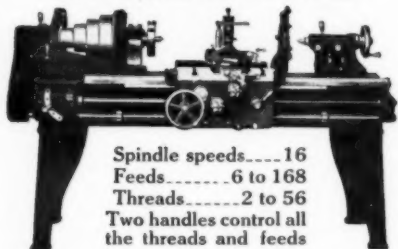
Folder 10 L explains their advantages in detail. Write for a copy.

We also build constant speed motors

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, Ohio

Heavy Quick-Change 15" Lathe

With 4-Step Cone for Wide Belt



Spindle speeds..... 16

Feeds..... 6 to 168

Threads..... 2 to 56

Two handles control all
the threads and feeds

An unusual combination of manufacturing capacity, tool-room accuracy, and general convenience for all-around lathe work. Furnished also with 3-step cone and double back gears.

GREAVES, KLUSMAN & CO., Cincinnati, O.

Felts

all grades for the machine tool trade cut to order into washers, gaskets, strips or any other shape. Write for samples and prices and send blue print or sketch of exactly what is required.

N. E. BOOTH

642-644 Pacific Street, Brooklyn, N. Y.

Handy To Have In The Shop



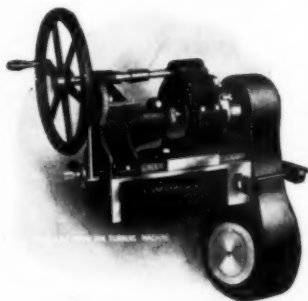
When Small
Pieces Must Be
Dried After

Coating, Dipping, Japanning,
Painting, Plating or Washing

A Centrifugal Dryer

The American Tool & Machine Co.
Incorporated 1864 BOSTON

Underwood's Portable Crank Pin Turner and Reborer



Does Work in Place—Made in Four Sizes

IT'S AS ACCURATE in its work as any shop tool, and as a time saver is worth many times its cost. Tho light in weight, it is strong and durable.

Four set screws center it true with the pin in the same manner as a lathe chuck. The feed is reversible while the machine is running, and has a rapid movement of the cutterhead along the slide. A range of variable feeds can be quickly obtained. The cutting tools are carried in a patent holder that grips them firmly.

Our Portable Tools save much time and money. Send for our catalog and get acquainted with our complete line.

H. B. Underwood & Company

Established 1870

1016-1022 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of second-hand machinery, either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for.

Write directly to the parties offering the machines for sale for prices and full descriptions. If you do not find what you require, use the slip inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Enterprise Machy. Co., 521 Monroe St., Phone Main 1295, Chicago

Disc grinder, No. 6 Gorton...	\$ 225.	Oil separator, No. 1 National...	\$ 35.
Drill, 25" b. g., p. f.....	100.	Planer, 24"x4' New Haven....	310.
Grinder, surface, 20x5 Sp'g'l'd.	300.	Planer, 27"x8', 1 head. Niles..	250.
Hack saw, Economy No. 2 new	30.	Punch press, No. 2 Niagara, o. b. i.	115.
Hack saw, Success, swivel vise	10.	Punch press, No. 3 Walsh, o. b. i.	185.
Lathe, turret, 24" h. s.....	80.	Saw table, iron 30"x36".....	55.
Lathe, 14"x3', ck., h. s., b. g....	100.	Screw mach., B. & S. No. 0, auto.	675.
Lathe, 18"x8', Pond, p. f.....	80.	Screw mach., hand, P. & W. 1/2"	70.
Miller, univ., all attachments...	550.	Shaper, 16", back geared.....	310.
Spot welders (3), like new, 8" capacity, guaranteed, \$275.			

FOR SALE BY

The Randle Machinery Co., - 1739 Powers St., Cincinnati, O.

ENGINE LATHES.	MOTORS.
18 in. x 8 ft. McFarlan.	All sizes and kinds.
16 in. x 8 ft. Steptoe.	GAS & GASOLINE ENGINES.
17 in. x 12 ft. Greaves-Klusman.	25 h. p. Dean.
Lathes complete with face plates, chuck, countershafts and all parts.	8 h. p. Springfield.
PLANERS.	ENGINES.
36x36x8 ft. Oesterlein, with countershaft and all tools.	Corliss, from 50 to 650 h. p.
BOILERS.	Automatic, from 15 to 350 h. p.
Horiz. tubular, from 36 to 200 h. p.	Throttling, from 5 to 260 h. p.
Fire box, from 8 to 150 h. p.	ELECTRIC GENERATORS.
Vertical, from 3 to 50 h. p.	3 1/2 to 300 k. w., belted and direct connected, alternating and direct current, with switchboards.
MISCELLANEOUS.	
Heaters, tanks, pumps, electrical, saw mill and general machinery, including a complete line of Iron Working Tools.	
Also a full assortment of new machinery.	
Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps.	

FOR SALE BY

The Osborne & Sexton Machinery Co., . . . Columbus, Ohio.

LATHES.	
11"x3' South Bend, h. s.	21x14 Wood-Light.
16"x6' Pond, overhauled.	28"-48"x13' centers, Harrington.
18"x10' Pond, overhauled.	22" Fay chucking lathe.
SHAPERS AND PLANERS.	
16" Steptoe, crank.	30" Morton, draw cut.
26" Smith & Mills.	32x32x6' Gray.
DRILLING MACHINES.	
22, 24 and 30" Hamilton.	Footie-Burt 4-spdl. multiple.
Quint 6-spindle multiple.	Footie-Burt 24" heavy duty.
4-spdl. Niles, 2" capacity.	Bickford 4-spdl. gang, 1 1/2" capy.
MISCELLANEOUS.	
Cold saw, Lucas, 8" stock.	Rolls, Toledo, shovel blanking.
Hammers, drop, 750 and 3,000 lbs.	Screw machine, No. 4 W. & S.
Miller, B. & S., power, small.	Screw mchs., Cleveland auto., (2).
Miller, 1 1/2" plain, dividing head.	Shear, pwr., 42" Stoll, 16-ga. metal.
Press, No. 21 Bliss.	Threading mches., Webster & P., (2).

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

BORING MILLS.

- | | |
|-----------------------------|------------------------------------|
| 24" bar Binsse, horizontal. | 42" Rogers, vertical, two heads. |
| 34" Gisholt, turret head. | 60" Baush, vertical, two heads. |
| No. 2 Rockford horizontal. | 72" Pond, two heads, late pattern. |

DRILLING MACHINES.

- | | |
|--------------------------------|--------------------------------|
| 1 and 4 spindle Taylor & Fenn. | 6' Bickford, universal radial. |
| 20" Barnes, plain lever feed. | No. 24 Foote-Burt, high speed. |
| 24" G. & E. sliding head. | 34' universal radial. |
| 36" Snyder, sliding head. | 6-spindle Gardam, multiple. |

GRINDERS.

- | | |
|----------------------------------|----------------------------------|
| No. 2 Binsse, surface. | No. 1 Brown & Sharpe, universal. |
| 14x72, and 18x168 Norton, plain. | No. 6 Rivett, internal. |
| No. 11 Landis, plain. | No. 70 Heald, internal. |

MILLERS.

- | | |
|--------------------------------------|-------------------------------|
| Nos. 1, 2 & 3 Cincinnati, universal. | No. 14 Hendey, plain. |
| No. 5 Becker, vertical. | No. 4 Burke, bench. |
| No. 2 Garvin, universal. | No. 2 Fox, hand. |
| No. 5 Cincinnati, plain. | No. 24 Brown & Sharpe, plain. |

LATHES.

- | | |
|--|--|
| 14"x 6' Lodge & Shipley, c. r., p. c. f. | 26"x15' Prentiss Bros., motor drive. |
| 16"x6' Lodge & Shipley, patent hd. | 26"x18' Pond, c. r., p. c. f. |
| 16"x8' Prentiss Bros., c. r., p. c. f. | 36"x15' Lathe & Morse, c. r., p. c. f. |
| 16"x 8' Bullard, c. r. | 38"x20' Fay & Scott, c. r., p. c. f. |
| 18"x10' Porter, c. r., p. c. f. | 40"x18' Newark, c. r., p. c. f. |
| 18"x10' Lodge & Shipley, patent hd. | Lo-Swing lathe. |
| 20"x10' Draper, c. r., p. c. f. | 20-42"x12' Fay & Scott, gap. |
| 20"x14' Fay & Scott, c. r., p. c. f. | 32"x18' column facing lathe. |
| 21"x12' Porter, c. r., p. c. f. | 16"x10' automatic threading. |
| 22"x 6' Reed, c. r., p. c. f. | 60" Stevens, pulley. |
| 22"x10' Bullard, c. r., p. c. f. | 14"x 5' American, Fox. |
| 24"x12' Putnam, c. r., p. c. f. | 22" Bogert, crankshaft. |

PLANERS.

- | | |
|-----------------------------------|-----------------------------------|
| 15"x15"x 3' Pratt & Whitney. | 42"x42"x14' Pond, 2 heads. |
| 24"x24"x 6' Wilson, 1 head. | 48"x48"x10' Powell, 2 heads. |
| 24"x24"x6' Gray, 1 head. | 42"x42"x14' Woodward & P., 4 hds. |
| 30"x30"x10' Bement, 2 heads. | 52"x42"x12' Cincinnati, 2 hds. |
| 36"x36"x 8' Gray, 1 head. | 60"x60"x15' Sellers, 2 hds. |
| 36"x36"x12' Lodge & Davis, 2 hds. | 71"x69"x14' Pond, 2 hds. |

HAMMERS.

- | | |
|-----------------------|---------------------------------|
| 25 lb. Dupont, trip. | 1200 lb. Billings, drop. |
| 50 lb. Bradley, trip. | 1000 lb. Pratt & Whitney, drop. |

PRESSES.

- | | |
|-----------------------------|----------------------------|
| No. 4 Mossberg & Granville. | No. 2 Hibbard, inclinable. |
| PG 4 Ferracute, geared. | E 12 Ferracute, inclined. |

SCREW MACHINES.

- | | |
|-----------------------------------|---------------------------------|
| 14"x8" Acme, wire feed. | 24" American, heavy. |
| No. 2 Dreses, wire feed. | 24" Gridley, auto. |
| No. 3 Garvin wire feed, f. b. g. | 2" Pratt & Whitney, wire feed. |
| 4" Warner & Swasey, wire feed. | 4" 1 and 1 1/2" Hartford, auto. |
| 14" Windsor, wire feed. | 4" Pratt & Whitney, auto. |
| No. 2 Pratt & Whitney, wire feed. | No. 53 National-Acme. |

SHAPERS.

- | | |
|-------------------------------|-------------------------|
| 15" Hendey, friction. | 20" Kelley, crank. |
| 16" Gould & Eberhardt, crank. | 20" Springfield, crank. |

MISCELLANEOUS.

- | | |
|----------------------------------|--------------------------------------|
| Automatic pinion cutter, Slate. | Gear cutters, 24" and 48" G. & E. |
| Bending rolls, 8', 4" cap. | Gear cutter, No. 1 Whiton, spur & b. |
| Bolt cutter, 3" Acme. | Motors, 3, 5, 7 1/2 and 10 h. p. |
| Broaching mchs., Nos. 3 & 4 LaP. | Pipe machine, 3" and 8" Jarecki. |
| Centering machine, 5" Whiton. | Pipe machine, 4" Saunders. |
| Cold saw, 20" Burke. | Profiler, 2 sp. Garvin. |
| Cold saw, No. 12 Higley. | Slotter, 10" Putnam. |
| Dynamometer, 40 h. p. Sprague. | Tumbler, 30"x24" Smith. |

SECOND-HAND MACHINERY

FOR SALE BY

Marshall & Huschart Machinery Company,
17 S. Jefferson St., Chicago. 334 N. Capitol Ave., Indianapolis.
915 Chemical Bldg., St. Louis.

BORING MILLS.

- 30" Bullard, single head, geared feed, three jaw chuck.
- 34" King, single head, three jaw chuck.
- 36" Niles, single head, three jaw chuck.
- 37" Baush, two swivel heads, plain table, chuck jaws.
- 42" Gisholt Rapid Production, single pulley drive, one turret, one swivel hd.
- 48" swing car wheel borer, for 36" wheels.
- 52" Rogers & Hemphill, two swivel heads.

DRILLING MACHINES.

- National ten spindle automatic.
- Four spindle Bickford, gang.
- Six spindle Taylor & Fenn sensitive.
- Four spindle Barr sensitive.
- 21" American, wheel and lever.
- 24" Mechanics, sliding head, back gears, power feed.
- 32" Hamilton, sliding head, back gears, power feed.
- 34" Lodge & Davis, back gears, power feed.
- 42" Barnes, positive geared feed, back gears.

RADIAL DRILLS.

- 3' Economic, plain.
- 3' Universal Radial Drill Co's plain, box table.
- No. 1 Bickford plain, cone drive.
- 5' Western full univ., gear box drive.
- 5' Atlas semi-radial.

GEAR CUTTERS.

- 18" Brainard, spur and bevel.
- 22" Gould & E., spur and bevel.
- 30" Flather, spur gear.
- Four spindle Norris semi-automatic, 4 universal heads.

GRINDERS.

- 2"x12" Ransom motor driven, dry.
- Style PN Yankee motor driven drill grinder.
- Norton cutter and tool grinder.
- 10"x34" Thompson universal.
- Hanson-V. W. No. 8 pol. grinder.

KEY SEATERS.

- No. 4 Mitts & Merrill.
- No. 3-A LaPointe broaching mche.
- Knowles broaching machine.

ENGINE LATHES.

- 13"x 5' Robbins.
- 14"x 6' Whitcomb-Blaisdell, compound rest, taper.
- 16"x 8' Flather, compound rest, chuck.
- 16"x 8' Lodge & Shipley, patent head, turret on bed, turret tool post.
- 17"x 6' Bradford, compound rest, raised to 20".
- 18"x 8' Lodge & Shipley, patent head, turret tool post.
- 18"x 8' Lodge & Shipley, patent head.
- 18"x10' Lodge & Shipley, patent head, turret tool post.
- 18"x10' Lodge & Shipley, patent head.
- 18"x15' Whitcomb-Blaisdell, compound rest.
- 20"x10' Lodge & Shipley, patent head, turret tool post.
- 20"x10' Lodge & Shipley, patent head.
- 20"x10' Flather, compound rest.
- 20"x10' American, geared head, compound rest.
- 22"x16' Pond, compound rest.
- 25"x20' Sellers, compound rest.
- 32"x10' American, five step cone, compound rest.
- 42"x20' Bridgeford, triple geared, raised to swing 52".
- Fitchburg Lo-Swing lathe, single pulley drive.

MILLING MACHINES.

- No. 4 Garvin, plain.
- No. 1 Owen full universal.
- No. 5 Kempsmith plain.
- No. 3 Owen plain.
- No. 2 Cincinnati high power vert.
- No. 3 Cincinnati universal, cone drive, all power feeds.
- 22"x22"x12' Newton slab miller.

PLANERS.

- 24"x24"x 6' Cincinnati.
 - 30"x30"x10' Gleason.
 - 48"x36"x20' Cincinnati, two heads.
- Send for our latest list Used Machinery now ready, giving full descriptions

SECOND.HAND MACHINERY

FOR SALE BY

**The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago
610 Merrill Building, Milwaukee, Wis.**

LATHES.

- | | |
|---------------------------------------|--------------------------------------|
| 14"x6' LeBlond, compound rest. | 36"x12' Bradford. |
| 16"x6' Lodge & Shipley. | 30"x12' Flather, compound rest. |
| 16"x6' Prentice Bros., compound r. | 32"x14' Putnam, compound rest. |
| 16"x7' Blaisdeil, comp. r. and taper. | 32"x18' Pittsburg, d. b. g. |
| 18"x8' Fairbanks. c. r. and taper. | 32"x18' American, comp. r., q. c. g. |
| 18"x10' American, q. c. g. | 36"x16' Bradford, t. b. g. |
| 19"x8' Reed, compound rest. | 42"x14' Bradford, t. b. g. |
| 20"x10' American, q. c. g. | 26-48x18' McCabe, double spindle. |
| 24"x14' Bradford. | 49"x 18' Fifield, with chuck. |

SHAPERS.

- | | |
|------------------------------------|---------------------------------|
| 6" Boynton & Plummer. | 20" Gould & Eberhardt. |
| 9" Pratt & Whitney, crank. | 24" Milwaukee Al. |
| 16" Gould & Eberhard, b. g. crank. | 26" Putnam, geared, belt shift. |
| 17" Economic, single gear crank. | |

PLANERS.

- | | |
|---|-------------------------------------|
| 22x22x5 Whitcomb, good order. | 36x36x12 Gray, 2 heads. |
| 24x24x5 Wilson. | 40x38x14 Putnam, old style, low pr. |
| 26x26x8 Whitcomb, (new, reduced price.) | 42x42x14 Detrick & H., open side. |
| 30x30x10 Flather, 3 heads. | 44x44x12 Pound, 2 heads. |

GRINDERS.

- | | |
|--|---|
| No. 1 Cincinnati, universal cutter and tool. | No. 2 Bath, universal. |
| 16"x66" Landis. | No. 2 Brown & Sharpe, surface. |
| No. 2 Norton, univ. cutter and tool. | No. 2 B. & S., surface, with Walker magnetic chuck. |

MILLING MACHINES.

- | | |
|----------------------------|-------------------------------------|
| No. 0 Van Norman, duplex. | No. 13 Garvin, plain. |
| No. 2 Hendy, b. g., plain. | No. 3 Cincinnati, universal. |
| No. 3½ Waltham, bench. | No. 5 Hendy, Lincoln pattern. |
| No. 6 Whitney hand miller. | No. 4 Garvin single spdl. profiler. |
| No. 5B Becker, vertical. | |

UPRIGHT AND RADIAL DRILLS.

- | | |
|-----------------------------------|--|
| 2' Fosdick, with tap. attach. | 18" Henry & Wright, ball bearing. |
| 4' Fosdick, with tap. attach. | Sellers double column drill, 72" between uprights. |
| 3' arm, Cincinnati, plain radial. | 42" Prentice Bros. |
| 4' arm, Baush post radial. | 25" Prentice Bros., sl. hd., b.g., p.r. |
| 5' arm Western universal radial. | |

POWER PRESSES AND PUNCHES.

- | | |
|---|---|
| No. 4 Consolidated inclinable. | No. 18 Bliss. |
| No. 3 Am. Can Co. inclinable. | No. 51 Badger, combination. |
| No. 2 Consolidated inclinable. | No. 4½ E. Rudolphi & K. arch press. |
| No. 1 Consolidated inclinable. | No. 5½ Walsh comb. gd., 2" stroke. |
| No. 166C Consolidated straight sided, geared. | No. 430 McDonald dbl. cr. o. b. pr. |
| No. 5 Bliss fly wheel punch press. | Humphrey single end punch, 36 in. throat, cap. 1½" in 1". |
| No. 30 Perkins open back inc. press. | Style "C" Cleveland single end punch & shear. |
| No. 3½ Bliss toggle press. | No. 5 L. & A. sgl. end punch & shear. |
| No. 3 Bliss double crank press. | |

SCREW MACHINES AND TURRET MACHINES.

- | | |
|---|---------------------------------|
| No. 2 Foster screw machine, with independent stops. | No. 51 National-Acme automatic. |
| 1x4½ P. & W. new model sc. mach. | No. 60 B. & S. automatic. |
| No. 1 Garvin screw machine. | 4-10" Cleveland automatic. |
| 1½" Warner & Swasey. | 14 Turret Lathes, small sizes. |
| | 1½" Brown & S. screw machine. |

BORING MILLS—VERTICAL AND HORIZONTAL.

- | | |
|---|-----------------------------|
| 76" Bullard, boring and turning. | 37" Niles, 2 heads. |
| 42" Bullard, 1 swivel hd., 1 tur. head. | 34" Colburn, swivel turret. |

GEAR CUTTING MACHINES.

- | | |
|--------------------------------------|---------------------------------|
| B. & S. 2 spindle auto. gear cutter. | 36" Flather, spur only. |
| Reynolds hobbing machine. | 36" Brown & Sharpe, spur only. |
| 42" Gould & Eberhardt, spur only. | 18" Brown & S., spur and bevel. |

SECOND-HAND MACHINERY

The H. A. Stocker Machinery Co.—Continued.

MISCELLANEOUS.

Bolt cutter, 8" Acme, dbl. rapid hd.	Cold saw, No. 4 Birdsboro, with 6 extra saws.
Bolt cutter, 4" Haberle dbl. head.	Cutting-off mch. 4" Hurlburt & R.
Bolt cutter, 1" Adams, dbl. head.	Hammer, drop 500 lb. Standard auto.
Bolt cutter, 1 1/2" Schlenker, sgl. hd.	Hammer, power, No. 2 Beaudry.
Bolt header, 4"	Hammer, steam, 100 lb. American.
Bulldozer, No. 5 Ajax.	Hammer, steam, 800 lb. Morgan.
Cold saw, No. 3 Cochrane & Bly.	

FOR SALE BY

Brown & Zortman Machinery Co., 2535 Liberty Ave., Pittsburg, Pa.

LATHES.

18"x 8' Lodge & Shipley.	28"x10' Prentiss.
26"x14' Gleason oil well lathe, with taper.	36"x16' Lodge & Shipley, triple grd., with taper, good as new.
26"x16' Prentiss oil well lathe, with taper.	36"x20' Betts.

SHAPERS AND PLANERS.

24" Hendy shaper (friction).	24"x24"x8' Lodge & Davis planer.
26" Cincinnati tr. gr. rack shaper.	36"x36"x10' G. A. Gray hvy. pattern planer, with three hds., (absolutely as good as new).
30" Morton draw-cut shaper.	
42"x42"x18' heavy pattern Betts planer (good as new).	

MISCELLANEOUS.

5' Bickford vertical boring and turning mill.

FOR SALE BY

A. D. White Machinery Co., 108-114 N. Jefferson St., Chicago

LATHES.

13"x 5' P. & W., taper and chucks.	24"x10' Lodge & Shipley, q. c.
16"x 6' Lodge & Shipley, q. c.	28"x14' Fifeild.
18"x 8' Scheilenbach, q. change.	28"x25' Putnam.

DRILL PRESSES.

20" Prentice.	32" Bickford, sliding head.
24" Aurora.	3' Bickford radial, cheap.
28" Bickford, sliding head.	3' American radial.
30" Kerkhoff, sliding head.	40" Aurora radial.

PLANERS.

24"x 6' Pond, 1 head.	28"x 8' Gray, 1 head.
26"x 6' Gray, 1 head.	32"x 8' Betts, 1 head.
26"x 8' Gray, 1 head.	38"x10' Gray, 1 head.

SCREW MACHINES AND TURRET LATHES.

16" No. 3 Pearson screw machine.	13" Drees turret lathe.
No. 2 1/2 P. & W. screw machine.	22" Lodge & Shipley turret lathe.
1/2" Cleveland automatic.	21" Gisholt, rapid traverse.
1/2" Pratt & Whitney automatics, (4).	24" Gisholt, rapid traverse.
3" P. & W. automatic.	No. 6-A Potter & Johnston, auto.
No. 2 Garvin screw machine.	

PUNCH PRESSES.

No. 2 Ferracute.	No. 5 Niagara, o. b. i.
No. 3 Ferracute.	No. 31 Bliss gap press.
No. 16 Wold.	

MISCELLANEOUS.

Blowers, No. 4 Garden City, (2).	Miller, No. 12 Garvin plain.
Boring, drilling and milling, No. 2 Franklin universal.	Miller, No. 9 Kempsmith, plain.
Grinder, cutter, H. G. Barr.	Miller, No. 24 Oesterlein, univ.
Grinder, Yankee drill, style "B".	Riveters, 3-16" Adt.
Grinder, No. 1-B Besly, disc.	Shaper, 14" P. & W., univ. vise.
Hammer, power, 50 lb. Dienelt.	Shaper, 16" Smith & Mills.
Keyseater, 16" Morton, portable.	Shaper, 24" Gould & Eberhardt.

SECOND-HAND MACHINERY

FOR SALE BY

**Niles-Bement-Pond Company, . . . 111 Broadway, New York,
Located at Chicago, Boston and New York.**

Send for Catalogue No. 18.

LATHES.

13x6 P. & W., r. & f., taper.
15x7 speed lathe.
16x10 P. & W., r. & f. & t.
18x8 LeBlond, c. r.
18x8 Davis, c. r.
18x6 Pond, turret tool post.
18x7 Pond, turret tool post.
19x8 Pond, compound rest.
20x10 Flather, c. r.
22x12 Niles, with taper.
22x22 Niles.

26x12 Pond, comp. rest.
28x12 Pond, compound rest.
30x14 Niles, c. r.
32x12 Pond, compound rest.
36x17 Pond, 220 v. motor drive, taper.
40x16 Bement, b.g., not screw cutting.
42x22 Niles, comp. r., tri. grd.
42x30 Putnam, comp. r., tri. grd.
50"x30" Niles large lathe, with raising blocks to swing 73".
44 in. P. & W. pulley lathe.

SCREW MACHINES, TURRET LATHES, ETC.

14"x18" New Model. P. & W.
No. 3, 2 15-16 in. Niles screw niche.
2x24 Jones & Lamson.
2x26 P. & W. piston and piston ring equipment.
21 in. Gisholt, turret.
24-27 Conradson semi-automatic turret, 2 3-16 in. hol. sp.
28 in. Milwaukee turret, 4 in. hol. sp.

4 in. Hartford automatic pin machine.
4 in P. & W. automatic screw mach.
4 in. P. & W. 2 sp. automatic screw machine.
4 in. Acme old style 4-sp. automatic.
4 in. single turret Spencer automatic.
21-32 in. No. 2 Brown & Sharpe automatic screw machine.

BORING MACHINES.

30 in. tur. hd. b. & t. mill. Colburn.
37 in. Niles b. & t., 2 heads.
50 in. Niles pulley borer.
10-16 (t. Niles b. & t., 2 heads.
10-16' Bement, 220 v., d. c., motor dr.

2 in. sp. Kelly hor. bor. and drill.
3 1/2 in. sp. Bement hor. bor. & drill.
4 in. sp. Niles, hor. bor. & drill.
96 in. swing x 10 ft. center bor. & facing; weight: about 43,000 lbs.

UPRIGHT AND SENSITIVE DRILLS.

13 in. 1 sp. sensitive, motor d., 110 v.
10 in. 3 sp. sensitive, Slate.
10 in. 3 sp. sensitive, Sigourney.
14 in. 4 spindle, style A, Barr.
18 in. 6 sp. E. Barr.
2 spindle dbl. column sen., Langelier.
17 in. 4 sp. gang, Jones & L.
20 in. No. 23 Foote Burt high duty.
20 in. Barnes, sq. base.
28" Aurora, sliding head.

30 in. sli. head, Gould & Eberhardt.
36 in. sliding head, Gould & E.
36" Aurora, sliding head.
3 sp. Niles rail drill, aragd. for motor.
4 spindle Bement, multiple, 11 ft. between housings.
No. 11 multiple drill, P. & W.
10 sp. adjustable R. & W., capacity 1 1/2 in. holes in 37 in. circles, belt or motor; weight: 30,000 pounds.

RADIAL DRILLS.

4 1/2 ft. semi-radial, Barr.
4 ft. Niles, plain.
4 ft. Niles, univ.
5 ft. Niles, plain.
5 ft. plain, motor, Pond.

5 ft. 6 in. universal, Niles.
6 ft. 10 in. semi-universal, Niles.
7 ft. 6 in. full universal, Niles.
Univ. portable radial, Prentice.

MILLERS AND GEAR CUTTERS.

No. 1 Duplex Van Norman.
24x7 table, plain, Becker.
No. 1 B. & S. plain, late model.
43x94 No. 3 Cincinnati plain, b. g.
No. 13 single spindle new model profiler, P. & W. *

Single sp. profiler, 21x24" tbl. Garvin.
6x14 thread miller, P. & W.
6x80 thread miller, P. & W.
24" Newark spur & bevel gear cutter.
36" spur and bevel, Gould & E.
36 in. spur gears, Pond.
72 in. spur gears, Niles.

RAILROAD MACHINERY.

46 in. car wheel lathe, Bement.
Niles double axle lathe.

Bement double axle lathe.
Putnam double axle lathe ex. heavy.

SHAPERS AND SLOTTERS.

10 in. crank shaper, P. & W.
10 in. crank shaper, Miles.
12 in. crank shaper, Bement.
20" Bement, 220 v. motor, traveling head, like new.

18 in. double trav. head, Cincinnati.
32 in. triple grd. rack, Cincinnati.
12 in. crank slotter, Bement.
14 in. crank slotter, Niles.

SECOND-HAND MACHINERY

Niles-Bement-Pond Company—Continued.

PLANERS.

22x22x6 Harrington.
26x26x7 Niles, heavy type.
26x23x16 Miles, 2 hds.
30x30x6 Pond, 1 head.
30x30x8 Pond, 2 heads.
30x30x11 Niles, 1 head.
30x30x24 Sellers, 2 hds.
36x36x 8 Niles, 1 head.
36x36x14 Pond, 4 heads.
36x36x20 Pond, 3 hds.

42x42x20 Miles, 3 hds.
48x48x12 Niles, 3 hds.
48x48x16 Pond, 4 hds., heavy, 220 v.
motor.
48x48x20 Sellers, 3 hds.
72x60x20 Niles, 2 hds.
86x86x30 Pond, 4 heads, reversing
motor drive.
14'6"x12'x30' Niles, 4 heads, 220v.,
pneumatic clutch dr., wt. 335,000 lbs.

MISCELLANEOUS.

Bar cut-off saw, 22" diam. blade.
Bending and straightening machine,
horizontal, for 10 to 15 in. beams
and channels.
Cut-off machine, 2½ in. P. & W.
Cut-off machine, 4½ in. Starr.

Grinder, drill, 3 in. Sellers.
Grinder, plain, 5x32 in. Landis.
Grinder, univ., 10x30 Landis.
Grinder, 12x96 in. Springfield.
Saw grinder, automatic.

FOR SALE BY

The Adams Company,

Dubuque, Iowa, U. S. A.

STEAM HYDRAULIC ELEVATOR.

For sale cheap, one Craig Ridgway steam hydraulic elevator, including cylinder, tank, valves and sheaves. Everything but the cable and car. Load 2 ton. Lift 16 feet. Good condition. Cost \$575. First fair offer takes it.

FOR SALE BY

The Esterline Company,

Indianapolis, Ind.

24 High-grade machine tools, used one year.

Automatic, No. 60 Brown & Sharpe.
Bulldozer, No. 2 Badger.
Drill press, Avey, ball bearing.
Drill, multiple spd., Fox No. 2.
Drill, multiple spd., Moline.
Gas furnace, Frankfort.
Grinders, disc, Nos. 2 & 4 Gardner.
Grinder, univ., No. 2 Cincinnati.
Grinder, plain, No. 1 Morse.

Lathe, Lodge & Shipley.
Millers, No. 2 Cincinnati.
Miller, hand, No. 6 Whitney.
Punch presses, Consolidated.
Sand blast, Lieman Bros.
Saws, Racine high-speed.
Screw machines, hand, 1" and 1½"
Acme, power feed.
Tappers, Garvin.

FOR SALE BY

Brown-McDonald Machinery Co.,

906-908-910 North Market Street;

St. Louis, Mo.

LATHES.

18"x10' Flather, h. s.
14", 16" & 18" Monarch, new, (5).
14"x 6' Flather, h. s., comp. rest.
14"x 8' Champion, h. s., comp. rest.
16"x 6' Hamilton.

17"x 8' Fifield.
20"x8' Porter, h. s., compound rest.
20"x12' Bradford, h. s., cpd. rest.
36"x16' Fifield, comp. rest.
Speed lathes, all sizes, (3).

DRILLING MACHINES.

20" Silver and Champion, new, (3).
3 & 4 spindle Reed sensitive.
26" Barnes, b. g., p. f., with tap. att.

36" Gang radial.
50" Sellers, b. g.
32" Hoefler, s. h. b. g. power feed.

PLANERS.

18"x18"x4½' Whitcomb.
30"x30"x9' New Haven.

24"x24"x7' Niles.

MISCELLANEOUS.

Air compressor, 8x8 Star vert., belted.
Brake, 10' Robinson, cap. 16 gauge.
Large stock of Emery Grinders, Blowers, Punch & Shears, etc.

Brakes, 8' & 10', double truss.
Floor crane, No. 4 Hercules.

SECOND-HAND MACHINERY

FOR SALE BY

Western Machinery Co.,

610 Baymiller St., Cincinnati, Ohio

LATHES.

- | | |
|--|--|
| 13"x5' Wagner, hol. spin., c. r. | 18"x8' Lodge & Davis, hol. sp. pl. r. |
| 14"x8' LeBlond, hol. spin., p. r. | 19"x12' Greaves & Klusman, h.s., c. r. |
| 14"x8' Cisco, quick change gears. | 20"x10' Flather, hol. spin., c. r. |
| 16"x6' Gray, hol. spin., c. r. | 22"x12' Niles, hol. spin., c. r. |
| 16"x6' Gray, hol. spin., plain rest. | 26"x12' Niles, hol. spin., c. r. |
| 16"x6' Bement, sol. spin., c. r. | 26"x12' Lathe & Morse, sol. sp., c. r. |
| 17"x10' Gray, h.s., c. r. turret on bed. | 32"x22' New York, solid spin c. r. |

SHAPERS.

- | | |
|--------------------------------|--------------------------------------|
| 6" Boynton & Plummer. | 15" Vonnegut. |
| 16" Hendey, micrometer att. | 20"x6' and 24"x7' Niles traverse ry. |
| 15" Parkins & Bosworth. | shapers. |
| 20" Smith & Mills, heavy duty. | |

MISCELLANEOUS.

- | | |
|-------------------------------------|--|
| Drills, upright, 15-20-24-28 & 32". | Presses, power, small, Ferracute, (4). |
| Drill, 4' plain radial. | Saws, power, (5). |
| Gas engines, several. | Large lot emery grinders, leather |
| Hammers, power, 25 lb., (2). | belting and supplies. |
| Miller, Aurora, with dividing head. | |

FOR SALE BY

Frank Toomey, Inc.,

127 N. Third St., Philadelphia, Pa.

LATHES.

- | | |
|-------------------------------------|-------------------------------------|
| 51"x20' Baker, blocked to 63". | 21"x 9' Lodge & Davis. |
| 30"x22' Bement-Miles. | 18"x10' Schumacher & B., taper att. |
| 30"x18' Bement-Miles. | 18"x 8' LeBlond, turret attach. |
| 28"x16' Fifeild. | 18"x 8' Reed. |
| 27"x21' Pratt & Whitney, taper att. | 16"x 8' Hendey-Norton, geared hd., |
| 26"x17' Johnson, taper attachment. | taper attachment. |
| 26"x12' Fifeild. | 16"x 6' Hendey-Norton, cone head, |
| 24"x10' Schumacher & Boye. | taper attachment. |

PLANERS.

- | | |
|--------------------------------|-------------------------------------|
| 60"x60"x14' Pond, two heads. | 48"x48"x16' Detrick & H., 2 heads |
| 60"x60"x14' Sellers, 4 heads. | on cross rail, 1 side hd., arranged |
| 33"x33"x12' Woodward & Powell. | to plane 60". |
| 28"x28"x 7' New Haven. | 12" Moore crank planer. |

SHAPERS.

- | | |
|------------------------|---------------|
| 24" American. | 16" American. |
| 20" Gould & Eberhardt. | 12" Bement. |

MILLING MACHINES.

- | | |
|-----------------------------------|---------------------------------------|
| 36"x12' slab, heavy pattern. | No. 3 Becker Brain'd pl., table 12x42 |
| No. 5-B Becker-Brainard vertical, | No. 1 Brainard plain, table 12x48. |
| motor driven. | Pratt & Whitney plain, table 35x5. |

MISCELLANEOUS.

- | | |
|---------------------------------------|--|
| Bolt cutter, 1 1/2" National. | Press, No. 3 Adriance. |
| Boring mill, 72" Bickford, 2 heads. | Presses, grd., Adriance, No. 406, (2). |
| Boring mill, horiz., 48" Bement. | Presses, combined honing and wir- |
| Boring and turning mill, 48" Sellers, | ing, No. 22 Adriance, (3). |
| 2 heads. | Pulley boring machine, 60" Har- |
| Hammer, 400 lb. Bement, single | rington, upright. |
| frame steam. | Punch and shear, dbl. end, Sellers, |
| Hammer, board drop, 500 lb., Pratt | 30" throat, 1 1/2" cap., wt. 35,000 lbs. |
| & Whitney. | Punch & s., dbl. end, 25" throat. |
| Internal grinding lathe, 16"x 5' | Shear, single end, 50" throat, 2" |
| Diamond. | capacity, engine driven. |
| Drill, 26" Currier & S., slid'g head. | Turret lathes 14" and 2" Foster & |
| Pipe machines, 3" and 6" Curtis & | Kimball. |
| Curtis, hand power, (2). | |
- Dynamos, motors, engines and boilers, Wood-working machines both new and second-hand. Send for our stock books.

SECOND-HAND MACHINERY

FOR SALE BY

Joseph T. Ryerson & Son, - 16th and Rockwell Sts., Chicago

PLANERS.

Item.		
H 169	Sellers, 42x42x6 $\frac{1}{2}$, 2 heads.	H 168 Sellers, 42x42"x8'6", 2 heads.
H1004	Hamilton 36x36x10, var. sp'd.	

LATHES.

H 767	11x3 $\frac{1}{2}$, speed.	H 947 Schumacher & Boye, 18x6.
H1058	Lodge & Shipley, 14x6 g. h.	H1029 Whitcomb-Blaisdell, 18x8.
H 804	LeBlond, 14x6.	H 948 American, 18x10.
H1076	Lodge & Davis, 16x6.	H1028 Hamilton, 19x10, q. c. g.
H1027	Flather, 17x8, q. c. g. —	H 838 Putnam, 32x16.

DRILLING MACHINES.

H1091	Cleveland, 15 ft. wall radial.	H1089 Prentice, 20" hand feed.
H 864	Quint 6 spindle turret head.	H1090 Barnes, 23" hand feed.

BORING MILLS.

H1097	Bullard 30", motor drive.	H 775 Bullard, 60", 2 heads.
H 733	Baush, 32", turret head.	

GRINDERS.

H 812	Landis No. 1 universal, range 9x24.	
H 811	Brown & Sharpe No. 3 cutter and reamer grinder.	
H1038	Ingersoll 36" inserted tooth cutter.	
H 802	Cincinnati No. 2 universal tool grinder with 220 v., d. c. motor.	
H 791	Valley City No. 9. disc and surface grinder.	
H 987	Gisholt universal tool grinder.	

PNEUMATIC TOOLS.

H 981	Sturtevant 38" exhaustor, 14" square discharge.	
H1093	Ingersoll-Rand 6x6 compressor.	
H 982	Pedrick & Ayer, 16-8x10, compound air compressor.	
H 984	Root No. 1, positive pressure blower.	
H 605	Albree pneu. riveter, 26" reach, for $\frac{1}{8}$ " rivets.	

MILLING MACHINES.

H 665	Ingersoll, slab 36x36x8.	H 964 Osterlein plain, 34x9x19.
H1066	Becker No. 5B. plain.	H1092 Cincinnati No. 3 plain.
H 860	Kempsmith No. 8 univ.	

SHAPERS.

H1098	American, 16" crank.	H1079 Rockford 24" crank.
H1061	Milwaukee 24" crank.	

TURRET MACHINERY.

H 655	Pratt & Whitney $\frac{1}{2}$ in. hand screw machine.	
H 914	Conradson 24-32 turret lathe.	
H 875	Garvin No. 1, $\frac{1}{8}$ " hand screw machine.	
H 765	Bardons & Oliver, 13", hand screw machine.	

MISCELLANEOUS.

H1085	Bevel shears, Lennox No. 2, $\frac{1}{2}$ " capacity.	
H 773	Boring and drilling machine, Niles No. 2 $\frac{1}{2}$ N., horizontal.	
H1071	Brake, double truss 12 ft. cornice, capacity No. 24 gauge.	
H1094	Brake, Robinson 8 ft., cap. No. 14 gauge.	
H1039	Concrete mixer, Ransom $\frac{1}{2}$ yd., steam drive.	
H 672	Cutting-off machine, 3 in. Hurlburt & Rogers.	
H1050	Gear cutter, 36" Superior.	
H1010	Hammer, American, 25 lb. steam post.	
H 960	Hammer, steam, 400 lb. Chambersburg.	
H 208	Profiling machine, No. 2 Pratt & Whitney.	
H 771	Saw, Newton, 7 $\frac{1}{2}$ " bar.	
H 623	Tapping machine, No. 1 Garvin automatic, $\frac{1}{8}$ " capacity.	
H 870	Wood trimmer, Fox No. 6-E.	

SECOND-HAND MACHINERY

FOR SALE BY

Vonnegut Machinery Co., 51 S. Meridian St., Indianapolis, Ind.

GRINDERS.

No. 23 Brown & Sharpe, cylinder.
No. 200 Heald, ring grinder.
No. 210 Heald, ring grinder.
No. 1½ Landis, internal grinder.

No. 22 Landis, plain.
No. 23 Landis, plain.
No. 10-B Besly, disc.
18" Gorton, disc.

TURRET LATHES AND SCREW MACHINES.

24x8 Lodge & Shipley, power feed.
18x6 Lodge & Shipley, power feed.

16" Acme, hand feed.
No. 0 Brown & Sharpe, hand.

MILLING MACHINES.

No. 12 Pratt & Whitney, Lincoln ty.
No. 3 Chicago hand miller.

No. 6 Whitney, hand miller.
No. 2 Garvin, duplex.

DRILL PRESSES.

2-spindle Style A Barr.
2-spindle Style A Barr, 1 taper.
4-spindle Style A Barr.

5-spindle Style A Barr.
24" Cincinnati.

AUTOMATICS AND GEAR CUTTERS.

No. 00 Brown & Sharpe.
14"x15" Cleveland.
No. 1 Gould & Eberhardt hobber.
No. 1 Whiton gear cutter.

22" Gould & Eberhardt gear cutter.
24" Becker-Brainard gear cutter.
36" Becker-Brainard gear cutter.

LARGER MACHINES.

36"x36"x12' Niles planer.

30"x20' Niles lathe.

We also have an assortment of small lathes, ranging from 9" to 18" swing.

FOR SALE BY

Spears & Riddle Co.,

Wheeling, W. Va.

GRINDERS.

10x72" Landis, universal.
10x36" Norton.
6x32" Norton.
No. 60 Heald, cylinder.
Heald, electric ring.
Cincinnati, cutter.

LeBlond, cutter.
Diamond, water tool, 30x4" wheel.
Barnes, water tool, 24x2" wheel.
Springfield.
Worcester, twist drill.

DRILL PRESSES.

3' Fosdick, radial.
28" Aurora, upright.
24" Aurora, upright.
20" Aurora, upright.
24" lever, upright, (2).
Barnes 3-spindle gang drill.
10" Barnes geared drill.

10" Barnes friction drill.
No. 1 Allen, sensitive.
7" Henry & Wright, sensitive.
No. 23 Foote-Burt, high duty, (2).
No. 24 Foote-Burt, high duty, (2).
Whiton center drill.

LATHES.

21"x13' Bradford.
18"x8' Lodge & Shipley.
18"x6' Lodge & Shipley.
17"x8' Bradford.

14"x6' Lodge & Shipley.
16"x6' Springfield, stud, (2).
12"x5' speed lathe.
16"x10' speed lathe.

MILLING MACHINES.

No. 3 Cincinnati, vertical.
No. 2 Cincinnati, vertical, (2).
No. 2 A Kearney & Trecker.

No. 2 Cincinnati, universal.
Kemp Smith Lincoln miller.
Whitney hand miller.

TURRET LATHES.

3" Jones & Lamson.
1½" Dreses, turret.

16" Warner & Swasey, turret.
12" Warner & Swasey, turret.

MISCELLANEOUS.

Arbor press.
Automatic, Gridley, for piston and rings.
Belt lacer, Peerless.
Bolt cutter, 1½" Acme.
Boring mill, horiz., No. 0 Fosdick.
Buffing mch., No. 7 Blount.
Cold saw, No. 15 Lea-Simplex.
Gear cutter, No. 1 G. & E.

Hack saw, power, Challenge.
Keyseater, No. 3 Baker.
Nut facer machine.
Planer, 33"x33"x10' Ohio M. T. Co., double face.
Polishing machine, belt.
Shaper, 20" Cincinnati.
Tempering furnace, No. 416 Rockwell.
Vertical turret lathe, 24" Bullard.

SECOND-HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 121 N. Jefferson St., Chicago, Ill.

ENGINE LATHES.

16"x 8' VonWyck, q. c.	22"x10' Fifield.
16"x 8' Prentiss.	22"x10' Blaisdell.
16"x 6' Hamilton, q. c.	24"x10' Schumacher & Boye, q. c.
16"x 6' LeBlond, taper.	24"x24' Fifield.
18"x 8' Reed.	26"x14' Fifield.
19"x11' Lodge & Davis, taper.	36"x12' Schumacher & Boye.
20"x 8' Hamilton.	36"x14' New Haven.
20"x 9' Draper.	36"x14' Fifield.
21"x10' Bradford.	

Also large assortment of smaller Engine Lathes.

UPRIGHT DRILLS.

20 Sibley & Ware.	31" Barnes, sliding head.
20" Mechanics' 2-spindle.	40" Lodge & Davis, sliding head.
22" Lodge & Davis.	24" Baker heavy duty, with compound table.
28" Sibley & Ware, sliding head.	

RADIAL DRILLS.

3' Fosdick, plain.	4½' Bickford, plain
4' Fosdick, plain.	5' Prentiss, plain.
4' Prentiss, plain.	

SHAPERS.

15" Hendy, friction.	24" Ohio, b. g., crank.
20" Cincinnati, b. g., crank.	30" Walcott, triple geared.

PLANERS.

24"x24"x 6' Whitcomb.	36"x36"x 8' American, two heads.
28"x26"x 6' Flather.	36"x35"x15' Woodward & Powell
30"x30"x 8' Putnam.	frog and switch planer.
36"x36"x 8' Geneva.	

MILLING MACHINES.

No. 2 Kempsmith, plain.	No. 3 Becker, vertical.
No. 3 Kempsmith, plain.	No. 4 Becker, vertical.
No. 3 Cincinnati, plain.	No. 4-A Becker, vertical.
No. 32 Kempsmith, Lincoln.	No. 5 Becker, vertical.

HAND SCREW MACHINES.

No. 1 Garvin, 4".	No. 1 Brown & Sharpe semi auto.
No. 1 Pratt & Whitney, 7-16".	1" Foster & Kimball.
No. 2 Pratt & Whitney, ½".	No. 6 Warner & Swasey, 2½".
No. 2 Bardons & Oliver.	

TURRET LATHES.

No. 3 Bardons & O., Fox Monitor.	21" Gisholt.
2x24" Jones & Lamson sliding head machines, with chuck and bar outfits, late pattern. (2).	24" Conradson.
18"x 6' Lodge & Davis.	28" Warner & Swasey manufacture ing lathe.

BORING MILLS.

42" Bullard, 2 heads.	42" Colburn, 2 heads.
-----------------------	-----------------------

PRESSES.

No. 2 Billings & Spencer trimming press, with side shear.	No. 1 Horning press, adjustable tbl.
No. 18 Bliss o. b. i.	No. 3 R. & K. double crank press.
	No. 12 Bliss, o. b. i.

MISCELLANEOUS.

Gas engine, stationary, 6 h. p., Kneeland.	Keyseater, No. 3 Mitts & Merrill.
Gear hobber, No. 12 Barber-Colman.	Pipe machine, 6" Saunders.
Keyseater, No. 3 Baker Bros.	Profiler, No. 4 Garvin.
Keyseater, No. 2 Mitts & Merrill.	Thread miller, 6x48 Pratt & Whitney.

Write for complete List just issued.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
707-715 Lakeside Av., N. W., Cleveland, Ohio

Branches: Detroit, Cincinnati, Pittsburg.

New, Rebuilt and First Class Used Machinery
Good Tools, Every One, and Guaranteed.

BORING MACHINES.

- | | |
|---|--|
| 2" Lucas horizontal table type boring machine, belt feed. | 3-24" Bullard vert. turret lathes. |
| 4" bar Bement-Miles horizontal tbl. type boring machine. | 2-30" Colburn, vert. swivel tur. head. |
| | 2-42" Bullard, vert. boring mills. |
| | 72" Pond double head, friction feed. |

DRILL PRESSES.

- | | |
|---|--|
| No. 1 Baker, high speed. | 2-spindle 20" Mechanic hand wheel and lever feed. |
| 6-spindle Quint turret. | 3-spindle B. F. Barnes wheel and lever feed, power feed. |
| 8-spindle adjustable Gardam. | 14" Foote-Burt, sgl. spd. sensitive. |
| 36" Gang gear feed plain radial. | 4-spindle Barr 12" sensitive. |
| 4' Pond, plain belt drive, hvy. pat. | 3-spindle Foote-Burt sensitive. |
| 4' Baush, plain radial belt drive. | 6-spindle Foote-Burt sensitive. |
| 4' Fosdick plain radial, single pulley, gear drive. | 2-spindle Foote-Burt sensitive. |
| 6' Prentice, gear drive. | 4-spindle Pratt & Whitney sensitive. |
| 23" Barnes, back geared belt p. feed. | 10" Barnes friction disc sensitive. |
| 26" Blaisdell back geared belt p. f. | 12" Taylor & Fenn, g. dr. sensitive. |
| 34" W. F. & Barnes, sliding head. | |
| 32" Pond, sliding head, belt p. f. | |

GEAR CUTTERS.

- | | |
|--|-----------------------------------|
| 5" Sloan & Chase hand feed spur and bevel. | 33" Gould & Eberhardt plain spur. |
| 24" Becker-Brainerd spur. | 36" Gould & Eberhardt plain spur. |
| 24" Fellows gear shaper. | 40" Flather, plain spur. |
| 24"—8" Gould & E. spur and bevel. | 36" Fellows gear shaper. |
| 28" Brown & Sharpe, plain spur. | 48" Gould & Eberhardt plain spur. |
| | 60x16 Gould & Eberhardt pl. spur. |

GRINDERS.

- | | |
|--|--|
| No. 70 Heald, internal and equip. | 10x72 Norton, plain and equipment. |
| Wilmarth & Morman drill, style P. | 18" Biesly double wheel disc. |
| Worcester drill, dry wheel. | No. 200 Heald ring grinder. |
| 6x32 Norton, plain grinder with all equipment. | Gisholt tool grinder. |
| No. 3 Landis plain. | Leland & Falconer 24" dbl. wheel tool grinder. |
| 10x36 Landis, plain. | No. 3 Diamond polishing stand. |
| 18x96 Norton, plain and equipment. | Heavy foundry grinder, 36" wheels. |

HAMMERS.

- | | |
|------------------------------|---|
| 25 lb. Bradley helve hammer. | 35 lb. Williams & White justice pwr. tire welding hammer. |
| 600 lb. Morgan steam hammer. | |

LATHES.

- | | |
|--|--|
| 14"x6' Hendey with taper att. | 18"x8' Flather plain rest. |
| 14"x6' Prentice all geared hd. c. r. | 20x10 Bradford compound rest. |
| 12-14"x6' Prentice compound rest engine, cone head, all equipment, some have taper attachment. | 20x12 Reed comp. rest with chucks. |
| 13"x6' Willard compound rest engine double back geared. | 22x12 Pond comp. rest and chuck. |
| 16"x6' Davis compound rest engine. | 20x10 Johnson compound rest, geared feed and chuck. |
| 16"x6' Lodge & Shipley pat. hd. c. r. | 22x16 Pond compound rest, chuck. |
| 18"x8' Fay & Scott plain cone head. | 24"x20" American compound rest belt feed, chuck. |
| 18"x8' Walcott & Wood comp. rest. | 26x16 Bridgford, taper attachment, chuck, belt feed. |
| 18"x8' Reed compound rest. | 38"x28' New Haven, compound rest. |
| 18"x8' Lodge & Davis compound rest taper attachment. | 50"x18' Fildfield tri. grd. engine lathe. |
| | 39"x9' roll lathe. |

MILLING MACHINES.

- | | |
|--|---|
| Fitchburg Lincoln type miller, capacity 30x84. | No. 2 Brown & Sharpe plain heavy milling machine. |
| No. 13 B. & S. Lincoln, late model. | No. 4 LeBlond, plain dbl. bk. grd. |
| No. 12 B. & S. Lincoln, late model. | No. 6 Becker, vertical, new. |
| 2-No. 13 Pratt & Whitney Lincoln. | |

SECOND-HAND MACHINERY

Motch & Merryweather Machinery Co.,—Continued.

PIPE MACHINES.

- 4" Jarecki steam pipe machine.
6" Saunders lathe bed type.

12" Curtis pipe machine.

PLANERS.

- 10" stroke, Bush crank.
24" Cincinnati heavy duty crank.
22"x4' New Haven single head.
22"x7' Gray single head.
22"x5' Gray single head. This is a tool room machine.
24x24x8' Powell, old style.

- 24x24x6' Woodward & Powell single head, new.
28x28x5' New Haven single head.
30x30x10' Whitcomb single head.
30x30x8' Lodge & Davis single hd.
36x36x10' Sellers, spiral drive one hd.

PUNCH PRESSES.

- No. 164 Bliss notching press.
No. 3, 3½ and 4 Toledo pl. inclinable.

No. 5 Buffalo Forge Co. combined hand punch and shear.

SCREW MACHINES.

- No. 1 Krauth & Benninghofen screw machine.
No. 2 Foster turret lathe.
No. 2 Bardons & O. screw machine.
No. 4 Bardons & O. screw machine.
No. 9 Bardons & O. screw machine.
2x24 Jones & Lamson, turret lathe, sliding head.

- 2x24 Jones & Lamson cone head turret lathe.
No. 55 Acme 4-spindle automatic.
No. 53 Acme 4-spindle automatic.
15" Dreeses turret lathe.
21" Gisholt turret lathe.
24" Davis turret lathe.

SHAPERS.

- 16" Ohio, single geared crank.
15" Hendey friction.
20" Kelly, bk. g., crank good as new.
20" Juengst back geared, crank.
20" Hamilton back grd. crank, new.
34" Gould & Eberhardt, b. g., crank.
24" Hendey, friction.

- 24" Queen City, latest model, back geared, crank, good as new.
24" Walcott & Wood, shifting belt.
20" Hendey friction.
22" Smith & Mills, shifting belt.
24" Morton draw stroke.

MISCELLANEOUS.

- Bolt cutter, 1½ National.
Bolt cutter, 2" double spindle Acme.
Chucking machine, automatic 4 spindle Prentiss, cap. up to 7" diam.
Fox lathes, 18" Warner & Swasey, complete, good as new (2).

- Keyseater, No. 0 Baker.
Portable planer, 40" stroke, Morton.
Slotter, 15" Betts.
Tapper, No. 1 Garvin.
Tapper, Pratt & Whitney.
Tooth rounding machine, Ingle.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

5' and 6' Prentice Bros. radial drills, equipped with belt or motor drive, \$450.00 and \$475.00 each.

LATHES.

- 36"x12' Pond, geared face plate.
28"x12' Blaisdell, complete.
24"x16' Reed, complete.
24"x12' Reed, complete.
24"x12' Lodge & Shipley.

- 18"x 8' Reed, complete.
16"x 8' Lodge & Shipley, taper att.
16"x 8' Greaves-Klusman, speed bx.
14"x 7' Lodge & Shipley, complete.

TURRET LATHES AND SCREW MACHINES.

- 40" Gisholt; 2x26 Pratt & Whitney, with tool and bar equipment; No. 7 Bardons & Oliver, wire feed; No. 2 Warner & Swasey, and other small screw machines.

MISCELLANEOUS.

- Boring mills, Bullard, Niles, Baush, horizontal and vertical.
Broaching machine No. 2.
Drill presses.
Gear shapers, Fellows 36".
Grinders, B. & S., Landis, Modern, Osterlein, universal.

- Milling machines, plain and univ.
Milling machines, vertical.
Planers, all sizes.
Punch presses.
Punch and shear combined, No. 4 Perkins.
Steam hammers.

These machines are all modern and late type. Send for our list and prices.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Co., - - - **35th & Iron Sts., Chicago, Ill.**

No. XH 41-Drill press, turret, 6-spindle National.
 No. XH 42-Drill presses, horizontal, 5-spindle Buckeye, (2).
 No. XH 48-Gear cutter, No. 3A Cincinnati automatic.
 No. XH 49-Gear hobbing machines, Barber-Colman automatic, (2).
 No. XH 50-Gear shapers, No. 6 Fellows, (2).
 No. XH 43-Grinder, 10"x40" Norton automatic.
 No. XH 44-Milling machine, slab, No. 1 Newton.
 No. XH 45-Milling machines, plain, No. 2 Fox, (2).
 No. XH 47-Radial drill, 36" American.
 No. XH 51-Screw cutting lathe, 16"x6" Walcott.
 No. XH 46-Turret lathe, No. 3 Warner & Swasey.
 Perfect working condition guaranteed. Free complete list No. XH 212.

FOR SALE BY

W. L. Perkins Machinery Co. - - - **30 Church St., New York**

LATHES.

16"x 8' Reed, comp. rest, hol. spdl.	22"x12' Reed, comp. rest, hol. spdl.
18"x 8' Flather, comp. rest, hol. spdl.	24"x12' Niles, comp. rest, hol. spdl.
20"x10' Flather, comp. rest, hol. spdl.	32"x12' Fitchburg, compound rest.

MISCELLANEOUS.

Boring mill, vert., 30" Ballard tur. hd.	Punch and shear, No. 1 Long &
Brass turret lathe, 18x6 American.	Allstatter, 48" throat.
Gear cutter, 22" G. & E. auto.	Slab miller, 24x12 Bement.
Miller, hand, No. 6 Whitney.	Turret lathe, 2x24 J. & L. set-over hd.
Miller plain, No. 4 B. & S.	Turret lathe, 3x36 J. & L. set-over hd.
Miller, universal, No. 2 Cincinnati.	

FOR SALE BY

Herman L. Winterer, - - - **912 Beach St., Philadelphia, Pa.**

LATHES.

36"x16' Putnam, triple geared.	22"x10' Harrington.
27"x12' Blaisdell, raising blks. to 33".	20"x10' Blaisdell.
24"x 8' American.	19"x 6' Hamilton.
22"x12' McCabe.	And many others.

TURRET LATHES.

25"x7' Pratt & Whitney chucking lathe.
 No. 6 Brown & Sharpe turret lathe.
 No. 32 Garvin turret lathe.
 No. OHT Hartford automatic screw machine.
 Several Pratt & Whitney turret lathes.

PLANERS.

48"x48"x14' Gray, 4 hds., diag. drive.	36"x36"x10' Detrick & Harvey, open
30"x30"x8' Flather.	side.

SHAPERS.

28" Juengst.	16" Smith & Mills.
24" Barker, b. g.	15" Hendey, friction.
20" Walker.	

MILLING MACHINES.

No. 4 Brown & Sharpe, plain.	No. 3 Fox, plain.
No. 14 Brown & Sharpe, plain.	No. 14 Cincinnati, universal.
No. 14 Brown & Sharpe, universal.	No. 1 Cincinnati, universal.
No. 3 Garvin duplex.	No. 14 Garvin, plain.

DRILLING MACHINES.

8' Warren universal radial.	20" Prentice.
24" Barnes.	20" Davis.
22" Prentice.	

PUNCHES & SHEARS.

30" gap Mahoning punch and shear, 1" cap.
 No. 16 Williams & White, 12" gap, cap. 1".

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co.,

215 S. Clinton St., Chicago, Ill.

Brakes and shears, 8' to 10'.
Draw presses, Bliss, Ferracute, (4).
Drills, sliding head, 24" to 40".
Drills, adjustable spindle, 4" and 8".
Drill chucks, \$5,000 worth, 5-32 to 1".
Fox turret lathes, (10).
Grinders, universal, (3).
Keyseater and slotter.
Lathe, 16"x6' Walcott, heavy.

Lathe, 16"x8' Walcott.
Lathe, 18"x6' Lodge & Davis.
Lathe, 20"x10' Springfield.
Lathe, 20"x10' Walcott.
Lathe, 33"x12' Prentiss.
Planers, 6' to 12', (3).
Riveters and spinners, 1/4" to 1".
Screw machines, 1/2" to 2", (10).
Shapers, 14" to 32", (8).

Notching press, tinner's rollers, bolt and pipe threaders, single and double air compressors and riveters.

100 other iron, brass, tinner's and wood-working machines, motors, etc.

FOR SALE BY

McCoy & Brandt,

410 House Building, Pittsburg, Pa.

BOILER SHOP TOOLS

Bending rolls, Cleveland, 14', cap.
3/4" plate, engine driven, 1 set.
Bending rolls, 8', cap, 3/4" motor drive.
Bolt cutter, 3" Acme, belted.
Bulldozer, No. 5 Williams-White.
Bulldozer, No. 5 Ajax.
Compressor, 16 & 10x10" Blaisdell,
beltd.
Crane, 15-ton, 31'6" span, 220 v.d. c.
Metal saws, revolving, Q. & C., 26"
blades, (2).
Punch, 21 1/2" Wilder, 3/4" thro 1/2".
Punch, No. 7 L. & A., 18" throat, 3/4"
thro 1/2".
Punch, No. 4 Long & A., 5" throat,
cap. 1/4 thro 1/2".

Punch, 36" throat, 3/4 thro 1/2".
Punch, horiz., Cleveland Style A-1,
12" throat, 1 1/4 thro 1".
Punch, 42" Cleve. Style G, 2" thro 1".
Punch, Cleveland Type G, 60"
throat, 2" thro 1".
Punch, dbl. end, Cleveland Type C,
24" and 12" throats, 1" thro 1".
Shears, rotary bevel, No. 4 Lenox,
3/4" plate.
Shear, rotary splitting, Lenox 4"
plate, 4' reach.
Shear, dbl. angle, L. & A. Class B,
cap. 6"x6"x1" angles, mounted on
turntable, motor drive.

FOR SALE BY

Badger-Packard Mchy. Co., 74-76 W. Water St., Milwaukee, Wis.
LATHES.

13"x22"x5 1/2' Barnes extension gap lathe and chuck.....	\$ 210.
No. 4 Barnes lathe and countershaft	50.
No. 4 Barnes lathes and countershaft (2), each.....	35.
9"x4' Seneca Falls lathe, compound rest and countershaft.....	110.
11"x5' Seneca Falls lathe, compound rest and countershaft with 8" chuck and 3" chuck fitted.....	150.
13"x6' Blaisdell lathe, with compound rest.....	175.
14"x6' Porter lathe, compound rest and countershaft, nearly new.....	225.
14"x6' Flather lathe, with rise and fall rest and countershaft.....	200.
16"x6' Fay & Scott lathe, pl. rest, countershaft and 12" independent ck.....	225.
18"x10' Hamilton lathe, compound rest, countershaft and 12" 4-jaw in- dependent chuck, also turret on shear.....	375.
21"x12' Lodge & Davis lathe, plain rest.....	375.
24"x12' Aldrich & Carver lathe, plain rest, countershaft.....	200.
26"x12' Reed lathe, compound rest, power cross-feed, two raising blocks, 24" independent chuck fitted.....	450.
30"x10 1/4' old style lathe, countershaft and chuck fitted in face plate.....	200.
PLANERS.	
20"x16"x4 1/2' Thayer & Houghton Co. iron planer, countershaft.....	\$ 135.
24"x24"x6' Lodge & Davis iron planer & countershaft.....	450.
SHAPERS.	
16" American late style shaper, back-gear'd and countershaft.....	\$ 300.
20" Springfield shaper and countershaft.....	325.

SECOND-HAND MACHINERY

FOR SALE BY

L. F. Seyfert's Sons, Inc.,

437 North Third St., Philadelphia

LATHES.

60"x16' Fifeild.
42"x32' Draper.
39"x17' Pond.
38"x16 $\frac{1}{2}$ ' Fifeild.
33"x16' Fitchburg.
32"x34' Fifeild.

30"x13 $\frac{1}{2}$ ' Sellers.
28"x14' Schumacher & Boye.
22"x 8' Porter.
20"x12' Fifeild.
18"x12' Champion.

PLANERS.

52"x52"x25'3" 1 head Betts.
48"x48"x13 $\frac{1}{2}$ ' 3 heads Bement-Miles.
42"x36"x13 $\frac{1}{2}$ ' 2 heads. Am. open side.
40"x40"x11 $\frac{1}{2}$ ' 1 head Powell.
37"x38"x11' 3 heads Belmer-Eames.
36"x36"x12' 1 head Powell.

36"x36"x9' 1 head Pond.
30"x30"x15' 2 heads Gray.
30"x30"x9' 2 heads Cincinnati.
27 $\frac{1}{2}$ "x27"x9' 2 hds. Woodward & P.
24"x24"x6 $\frac{1}{2}$ ' 1 head Pease.

A large stock of iron and woodworking machinery, electric and steam power equipment and contractors' machinery. Send for complete list.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.,

St. Louis, Mo.

LATHES.

14"x12' Lodge & Davis.
16"x 6' Pratt & Whitney.
16"x 6' F. E. Reed.
16"x 6' Hamilton.
17"x 8' Greaves & Klusman.

20"x 8' Whitcomb-Blaisdell.
21"x 9' Lodge & Davis.
28"x16' Flather.
32"x10' Bradford.
Fitchburg Lo-Swing.

PLANERS.

24"x24"x6' Gray.
24"x24"x8' American.

36"x36"x8' Hamilton.
44"x44"x14' Niles.

DRILLING MACHINES.

20" Barnes drill.

36" arm Bickford radial.

BORING MILLS AND BORING MACHINES.

36" vertical, two heads.
6" Niles, one head.

No. 1 Barret, horizontal borer.
72" Niles horizontal cylinder borer.

AIR COMPRESSORS.

6x8 belted.
8x8 belted.
8x8x8 steam driven.
10x10x10 steam driven.

600' steam driven.
500' motor-driven.
650' motor-driven.

TRAVELING CRANES.

40' span 25-ton electric, 220 v., d.c.

50' span 10-ton electric, 220 v., d.c.

MISCELLANEOUS.

Bulldozer, No. 4 Williams-White.
Grinder, No. 16 Brown & Sharpe, automatic.
Grinder, 10"x7 $\frac{1}{2}$ " Landis.
Hydraulic jack, 50 ton.

Miller, plain, No. 3 $\frac{1}{2}$ Fox.
Pipe machine, 4" Borden.
Screw mch., $\frac{1}{2}$ " P. & W. automatic.
Screw machine, hand, 1" P. & W.
Shear, splitting, 50" throat.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

THE E. L. ESSLEY MACHINERY CO

555-557 WASHINGTON BLVD CHICAGO
222 GRAND AVE MILWAUKEE

These tools should be of interest to you. Some are rebuilt and others brand new, as indicated. Write for full description and special prices.

Upright Drills and Radials.

- 1-sp. GUARANTEE H-S. B-B Sensitive, new 3-sp. ditto, new.
- Diamond Wall Radial.
- 2' AMERICAN Sens. Radial.
- 4' No. 1 BICKFORD Plain Radial, rebuilt.
- 6' POND, Heavy Plain Radial.

Lathes.

- 12-22x54 BARNES Sliding Bed Extension Gap Lathe, new.
- 14x6 MONARCH, 3-step cone, dbl. back geared.
- 16x6 MONARCH, Standard Pattern, new.
- 16x6 SPRINGFIELD, Standard Pattern.
- 18x10 MONARCH Standard Pattern, new.

Milling Machines.

- No. 32 KEMPSMITH Lincoln-type geared feed box, late type, fine condition.
- No. 2 OWEN Plain, new. (2).
- No. 3 OWEN Plain, new.
- No. 3 OWEN Universal, new.
- BURR Keyseat Miller.

Screw Machines.

- No. 2 GARVIN, plain hd., auto. turret, collets, etc., fine shape.
- No. 12½ GARVIN, frict. hd., auto. ck. auto, turret, collets, fine shape.
- No. 2 WARNER & SWASEY 13-16" cap., plain head.
- 4" GRIDLEY 4-sp. Automatic.

Miscellaneous.

- Band Saw, 36" SILVER, new.
- Boring Mill, 51" NILES, 2 heads.
- Boring machine, BINSSE Horizontal, 3½" bar.
- Boring machine, No. 14 BARRETT horizontal, 3½" bar.
- Boring Machine, No. 36 Rochester Floor Type Boring, Milling, Drilling, and Tapping Machine complete with plain facing attachment, block table, five high speed milling cutters of various sizes, 5 HP Westinghouse Motor, latest type machine, in use five weeks, as good as new. Write for detailed description and attractive proposition.
- Broaching Mch. No. 3 LAPOINTE M. T. CO.'S, 3 bars, fine shape.
- Cutting-Off Machine, HOLTON heavy duty, new.
- Disc Grinder, No. 4 BESLY, 18".
- Gear Hobber, No. 1 ADAMS-FARWELL.
- Gear Hobber, REYNOLDS.
- Grinder, No. 2 BATH Univ., 10x25".
- Mitering Machine, No. 5 FOX, fine shape.
- Planer, 22"x22"x4' PEASE, one hd.
- Planer, 40x36x12' NEW HAVEN, 2 heads.
- Power Punch, 12" style "C" CLEVELAND, new, cap. 1" in ½" plate.
- Punch, No. 6 WHITING, 15" tht., capacity 13-16"x4".
- Punch & shear, No. 2 CINCINNATI, 12" throat.
- Saw, SMITH & POST, Power Cold Saw, cap. 4½" rds.
- Turret Lathe, 3"x36" JONES & LAMSON, nearly new, bargain.
- Tapper, No. 1 GARVIN vertical.
- Wire Straightener, 3-16" SHUSTER, "ADT" Model, cap. 4", new.

In replacing our manufacturing equipment, we find the following first class Used Machine Tools, which we offer at attractive prices:

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16"x 6' Hendey, q. c. g.
16"x 8' Reed.
17"x 6' Gray.
18"x 8' Dodge & Shipley, single,
pulley driven. (2).
20"x 8' Lodge & Shipley, q. c. g.
20"x 10' Lodge & Shipley, q. c. g.
20"x 12' Lodge & Shipley, q. c. g.
24"x 8' Lodge & Shipley, q. c. g.

SPECIAL LATHES

No. 3 Lodge & Shipley Rapid
Reduction Lathe.
24"x 7' Lodge & Shipley Chuck-
ing Lathe.
14"x 6' Towsley Speed Lathe.

METAL SAWS

Globe Power Hack Saw, 8" cap.

MISCELLANEOUS MACHINES

One Marion Double Grinder.
One Marion Double Grinder on stand.
One Diamond Disc Grinder on column.
One Sturtevant Blower, Diameter of outlet 24".
Universal Swivel Table for Radial Drill.
Brown & Sharpe Grindstone Frame for 5"x36" Stone.
One Mueller Grindstone Frame for 4"x27" Stone.
One 12"x40" Mumford Molding Machine.
One Ohio Planer, 24"x24"x12' with two heads on cross rail.

**The Lodge & Shipley Machine Tool Co.
CINCINNATI, OHIO, U. S. A.**

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Big Lathes.

60"x25' Pond, type heavy.
56"x16' Pond.
52"x28' Putnam.
50"x16' Fitchburg.
48"x24' Fitchburg.
Blocks to 66".
42"x20' Betts.
36"x16' Putnam.
32"x12' Fitchburg.
30"x12' Pond.
28-48"x14' Harrington gap.
27"x14' Lodge & Shipley.
Geared head—quick change.

Other Lathes.

27"x16' Putnam.
24"x10' Fitchburg.
24"x16' Fitchburg.
24"x12' Putnam.
21"x10' Schumacher & Baye.
20"x10' Standard.
16"x6' Rockford, q. c.
14"x 6' Reed.

Planers.

76"x14' Pond, 2 heads.
74"x14' Pond, 3 heads.
72"x28' Niles-Bement-Pond, 4 hds.
60"x12' Niles-Bement-Pond, 4 hds.
56"x16' G. A. Gray Co.'s 2 heads.
48"x16' Pond, 3 heads.
48"x10' Betts, 1 head.
42"x14' Pond, 1 head.
46"x12' Sellers, 2 heads.
36"x10' Niles-Bement-Pond, 2 hds.
36"x 8' Gray, 2 heads.
36"x 8' Pond, 1 head.
30"x 8' Powell, 1 head.
30"x 6' Niles-Bement-Pond, 1 head.
25"x 6' Sellers, 1 head.

Slotters.

24" stroke Sellers.
13" stroke Bement-Miles.
12" stroke Niles-Bement-Pond.

Radial Drills.

4' Arm Bickford, full universal.
5' Arm Prentice, plain.
5 1/2' Arm Prentice, plain.
5' Warren half universal.
5 1/2' Prentice, plain.

Upright Boring Mills.

7-10' Betts, 2 heads.
8' Betts, 1 head.
6' Pond, 2 heads.
4' Bausch, 2 heads.
3 1/2' Gang, 2 heads.
3' Bullard, 2 heads.
2 1/2' King, turret head.

Milling Machines.

Niles-Bement-Pond, 24"x12" slab planer type.
Brown & Sharpe No. 24 table 81"x 17 1/2" quick change.
Garvin No. 15 plain.
Newton Manufacturers' style table 58x16.
Brown & Sharpe vertical 53x16.

Turret Lathes.

28" Pond Gisholt type.
26" Bullard turret & chucking machine.
24" Gisholt, with taper attachment.
22" Potter & Johnston dbl. turret.
20" Pratt & Whitney.
11" Windsor.
2"x24" Jones & Lamson, with tools.

Boiler Tools.

60" throat Hilles & Jones punch and shears.
30" throat Cleveland punch and shears—Arched jaw.
10' Bending rolls—drop housing.

Gear Cutters.

36" gear shaper—Fellows.
22" hobbing machine—Cleveland.
22" gear cutter for spur and bevel gears—Gould & Eberhardt.

Steam Hammers.

700 lb. Bell.
400 lb. Erie.

Miscellaneous.

5-spindle Reed sensitive drill.
24" shaper—Putnam.
12" shaper—Sellers.
Horizontal boring mill, 2 1/2" bar Niles-Bement-Pond.

J. J. McCABE, 30 Church St., NEW YORK

Wormer's Bargain List **Second Hand and New Machines**

New Machines At Bargain Prices

Bolt cutter, 14" Economic.
 Drill, 20" Peerless, lever feed.
 Drill, 20" Peerless, b. g. and p. f.
 Gear hobber, No. 1 Farwell.
 Grinder, disc, No. 6-A Diamond univ.
 Grinder, disc, 18" Cook, double end.
 Hack saw, No. 4 Racine, high speed.
 Lathe, 15"x6" Schellenbach, q. c.
 Lathe, 16"x6" Hamilton, q. c.
 Lathe, 18"x10" New Haven.
 Lathe, 20"x8" LeBlond, q. c.
 Lathe, 21"x12" New Haven.
 Lathe, 22"x10" LeBlond, q. c.
 Lathe, 24"x14" Porter.
 Lathe, spinning, 15" Prybil.
 Miller, hand, No. 0 Farwell, q. c.
 Press, No. 5 Perkins, Model L, grd.

Press, No. 12 Consolidated, deep throat, plain, 19" throat.
 Press, No. 12 Michigan, deep throat, geared, 24" throat.
 Press, No. 10 Michigan, deep throat, plain, 18" throat.
 Press, No. 50 Perkins, model B., inclinable, geared.
 Punch and shear, No. 3 Sutton, blacksmith type.
 Punch and shear, No. 4 Sutton dbl. end, geared, 18" throat.
 Screw mche., 3/4" No. 140 Wells, pl. hd.
 Shaper, crank, 16" Queen City, b. g.
 Shaper, crank, 24" Walcott, b. g.
 Shear, squaring, 52" Niagara, foot.

Second-Hand Machines

Lathes.

14"x 6' Prentice.
 15"x 6' Flather.
 16"x 6' Reed.
 18"x 6' Lodge & Davis.
 18"x 8' Walcott & Wood, rebuilt.
 18"x 8' Lodge & Davis.
 18"x 8' New Haven, rebuilt.
 18"x 8' Hamilton, all geared head.
 12-Speed lathes, various sizes, write for special list.

22"x 8' Field.
 21"x11' Lodge & Davis.
 22"x16' Putnam, plain turning.
 60" Stevens pulley lathe.
 12"x4' plain turning lathes, (2).
 Bement single axle lathe.
 25"-31"x14' LeBlond, heavy duty crankshaft lathe, good as new.

Screw Machines.

3" Cleveland automatic.
 4" Cleveland automatic.
 No. 3 Foster, friction head.
 3" Cleveland automatic.

No. 4 Brown & Sharpe, hand, plain head.
 1 1/2" Garvin, hand, friction head.
 No. 2 Brown & Sharpe automatic.

Turret Lathes.

19"x6" LeBlond comb., almost new.
 24" Gisholt, 6 1/2" capacity.
 12-Plain and friction hd. turret lathes. Fox lathes, etc.; special list.

Drills.

2-3 & 4-spindle sensitive.
 28" Snyder, sliding head.
 31" Barnes, sliding head.
 20" Barnes.

Miscellaneous.

Alligator shear.
 Car wheel borer, 48" Bement.
 Cylinder borer, vertical, 2-spindle Foote-Burt.
 Hammer, steam, 700 lb. Bell.
 Hammers, Bradley, var. sizes, (12).

Keyseater, No. 2 Mitts & Merrill.
 Punch and shear, dbl. end, Walcott & Wood, 20" throat.
 Shaper, 26" American, geared, shifting belt.

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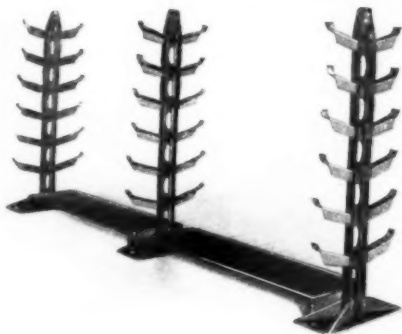
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